

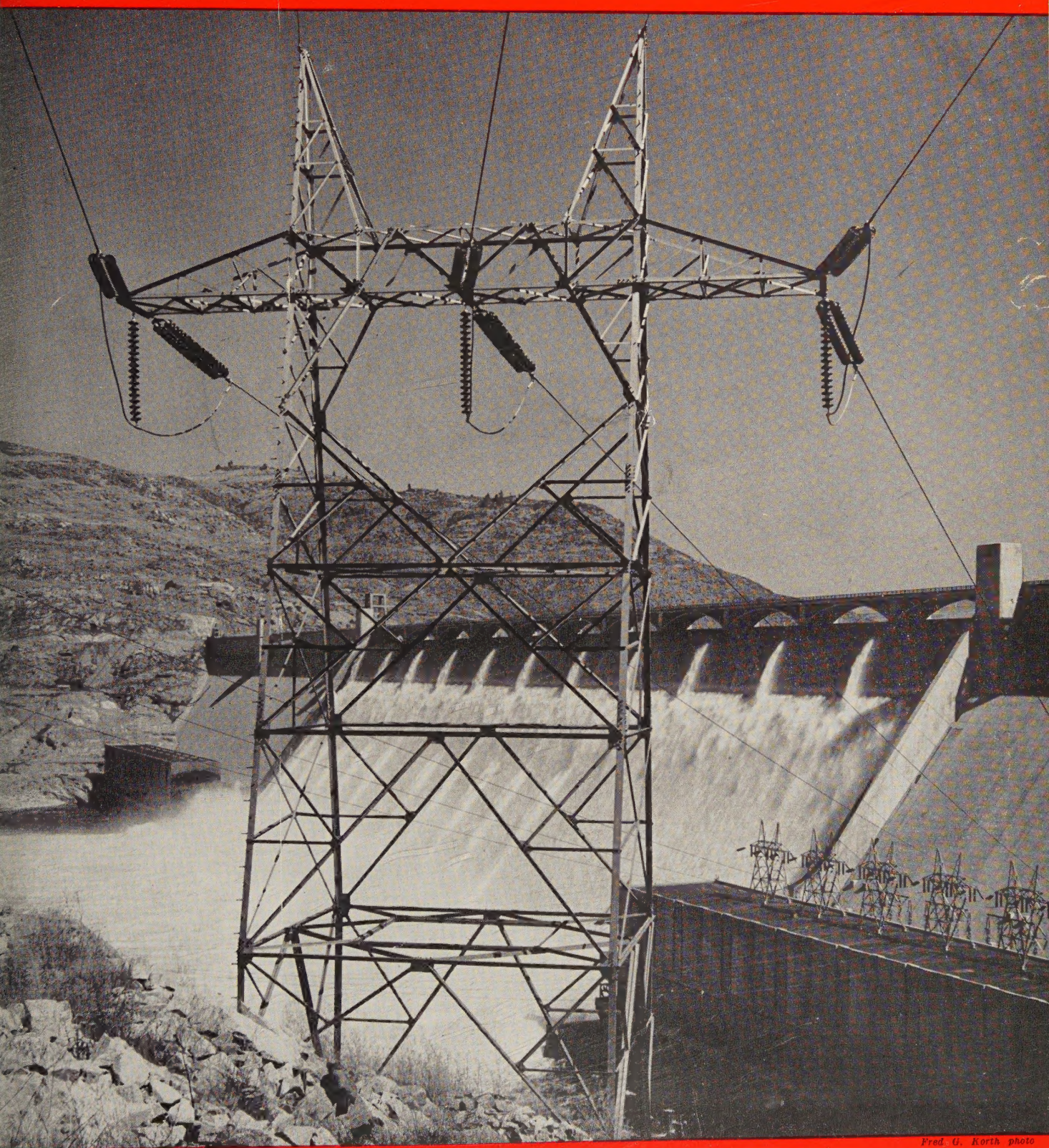
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COMMERCE

M A G A Z I N E

MAY, 1948

25 CENTS



Fred. G. Korth photo

ELECTRIC UTILITIES GAIN IN RACE WITH POWER SHORTAGE—See Page 13

BRANDED

WELDED

10-47

CHICAGO BELTING COMPANY



between the Plies

CHICAGO BELTING COMPANY
CHICAGO BELTING COMPANY
CHICAGO BELTING COMPANY - TENSION

for Permanent Identification

CHICAGO BELTING Identity is Never Lost!

As a Protection and Service to the many users of CHICAGO BELTING we brand all of our double belting between the plies in addition to our surface branding, as illustrated above. Even if the surface brand has worn off after many years of wear, our belts can always be identified beyond all doubt by simply opening up the plies.

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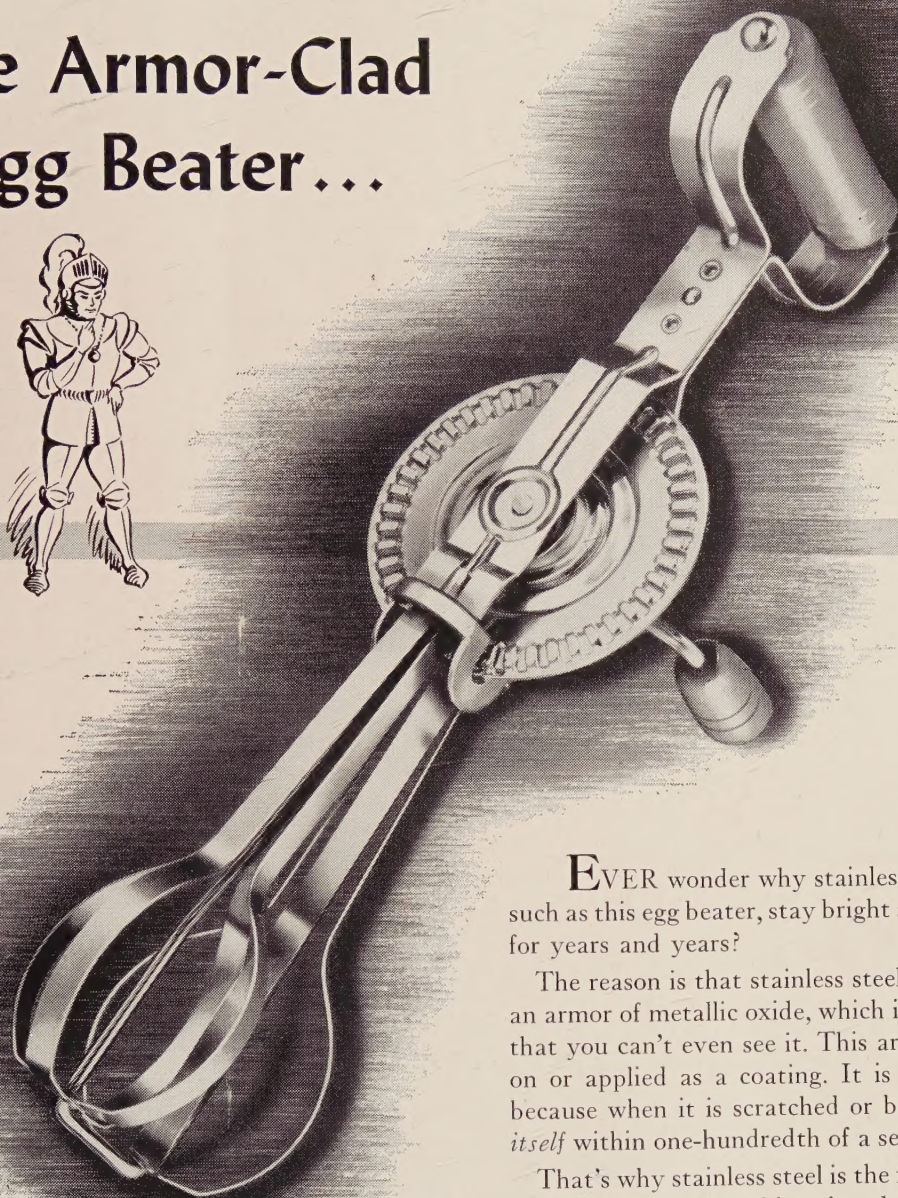
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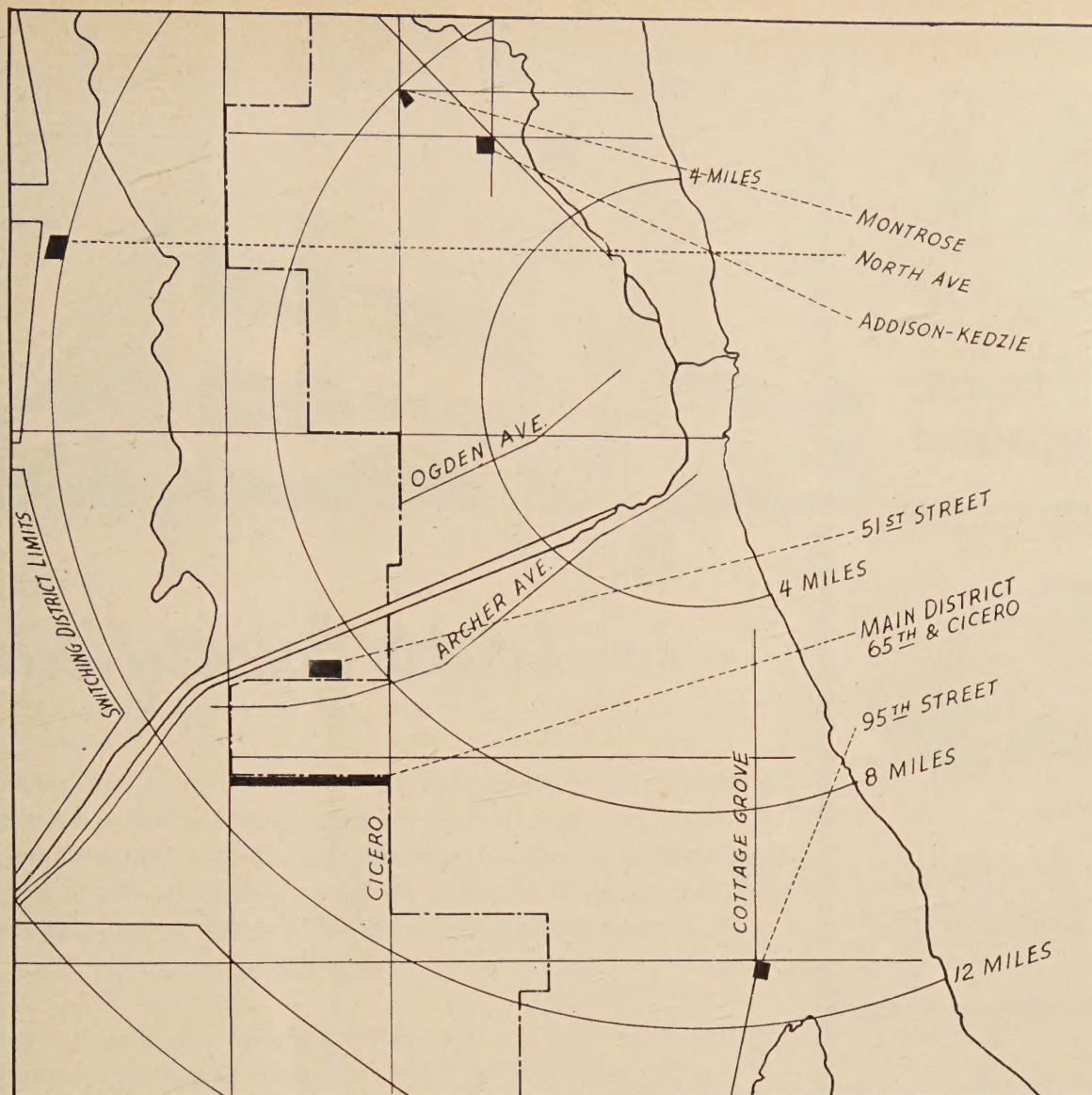
**The Main Line Airway
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nearly everywhere**

STATISTICS OF CHICAGO BUSINESS

	March, 1948	February, 1948	March, 1947
Building permits	392	256	444
Cost	\$8,025,100	\$8,018,700	\$8,324,600
Contracts awarded on building projects, Cook Co.	1,332	549	1,644
Cost	\$42,040,000	\$28,216,000	\$26,315,000
(F. W. Dodge Corp.)			
Real estate transfers	5,649	4,744	5,677
Consideration	\$8,834,541	\$5,578,865	\$10,329,299
Retailers' Occupation Tax Collection, Cook Co.	\$7,171,534	\$7,255,315	\$6,530,166
Department store sales index (Federal Reserve Board) (Daily average 1935-39=100.)	220.9*	197.7	215.4
Bank clearings	\$3,253,373,877	\$2,939,189,381	\$3,021,383,693
Bank debits to individual accounts:			
7th Federal Reserve District	\$16,935,000,000	\$14,109,000,000	\$15,130,000,000
Chicago only	\$9,325,877,000	\$7,449,095,000	\$8,079,357,000
Chicago Stock Exchange transactions			
Number of shares, stocks	566,000	445,000	569,000
Market value of shares traded	\$15,827,891	\$12,716,814	\$15,608,236
Railway express shipments, Chicago area	1,914,469	1,750,153	2,321,311
Air express shipments Chicago area	61,026	52,920	51,739
L.C.L. merchandise cars	30,755	27,587	32,089
Electric power production, kwh	1,015,564,000	959,912,000	935,214,000
Originating long distance telephone messages	2,766,946	2,475,934	4,761,417
Revenue passengers carried by Transit Authority Lines:			
Surface Division	75,189,841	68,265,008	76,843,173
Rapid Transit Division	16,658,815	15,075,599	15,942,264
Postal receipts	\$9,003,532	\$7,637,791	\$8,015,140
Air passengers:			
Arrivals	78,556	64,888	101,498
Departures	78,010	69,077	92,270
Consumers' Price Index (1935-39=100.)	169.0	168.8	156.2
Live stock slaughtered under federal inspection	418,118	509,901	513,461
Families on relief rolls:			
Cook County	18,702	17,949	15,097
Other Illinois counties	16,895	16,656	16,005
*Preliminary figures.			

JUNE, 1948, TAX CALENDAR

Date Due	Tax	Returnable to
10	Employers who withheld more than \$100 during previous month pay amount withheld to	Authorized Depository
15	Payment of one-quarter of 1948 estimated tax found due March 15 by individuals. (Those required to file declaration for first time, or making revised declaration pay one-third of the balance of 1948 estimated tax)	Collector of Internal Revenue
15	Illinois Retailers' Occupation Tax return and payment for month of May	Director of Revenue
15	Second quarterly installment of 1947 Federal Income Tax by Corporations and Fiduciaries	Collector of Internal Revenue
15	Payment of Federal Income Tax withheld at source	Collector of Internal Revenue
30	Federal Excise Tax return and payment due for May, 1948	Collector of Internal Revenue



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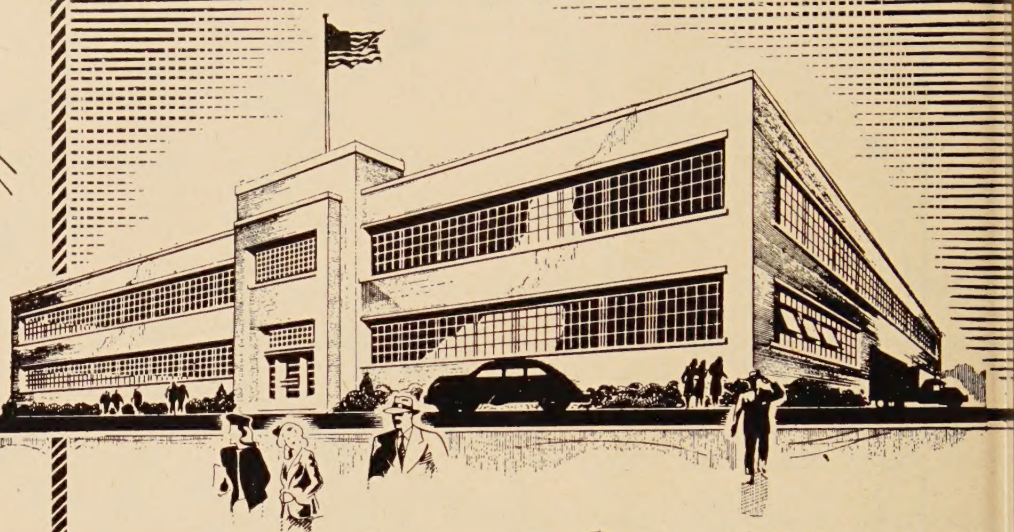
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CHICAGO 3, ILLINOIS

COMMERCE

M A G A Z I N E

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Alan Sturdy, Editor

Lewis A. Riley, Associate Editor



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In This Issue--

One evening just before Christmas, when lights glistened on Yule trees, in shop windows, homes and factories, the drain on the nation's electric power facilities was the heaviest in history. In some parts of the country, power consumption edged close to capacity, forcing the utilities to curtail service to some users to accommodate others. The progress in overcoming this critical shortage is reported by Joe Egelhof, staff writer of the Chicago Journal of Commerce, in an article on page 13.

For some years, industry has employed polling techniques to provide accurate yardsticks to consumer tastes in product styling, color, quality, and advertising. Many companies use polls to determine the effectiveness of their public and employee relations programs. Herbert Fredman surveys this increasing use of opinion polls by business in an article on page 18.

Does formal education really equip a man for a good job in American industry? Many businessmen, and a surprising number of educators, believe not. For one thing, they say, educators know too little about modern industry. Now, an experiment designed to bring industry and education together is under way. The idea started with young teacher at Michigan State College, whom Commerce introduces in an article on page 15.

There's still considerable talk throughout industry about the big, postwar order backlogs for automobiles, refrigerators, radios and scores of other consumer goods. Recently, the Department of Commerce undertook to determine the size of these important backlogs after two and a half years of peacetime production. COMMERCE summarizes the government's findings in an article on page 20.

Peroxide—long a boudoir standby of many an uncertain blond—became the subject of extensive wartime research, which transformed the hair tint and mild antiseptic into a wallop-ing new power source. An article reviewing the significance to business of this scientific development begins on page 16.

Many business concerns have saved time and money through the addition of a company library. Herman H. Henkle, librarian of John Crearar Library provides suggestions on the subject in an article on page 21.

The Editor's Page

■ Dodging The Issue

GRADUALLY, and without official acknowledgment, the "right to strike" is being abridged. By use of contempt of court proceedings, John Lewis has twice been compelled to send his miners back to work when national disaster threatened. By use of both the fiction that a war emergency still continued and court proceedings, a strike which would have paralyzed the railroads was forestalled. This, despite a specific grant of the right to strike in the Railway Labor Act.

Few will deny that the miners had to be gotten back to work and that the railroads had to be kept operating. In fact, public opinion probably never will again permit a railroad strike, and it is doubtful that practically semi-annual interruptions in coal mining that last until they shut down other industries will be tolerated much longer.

Under these circumstances it is high time that the whole question of the "right to strike" be re-examined. Must the workers in certain industries be openly denied by law the use of the strike weapon in the national welfare just as government workers are? Should industrywide strikes be made illegal in certain industries or all industries in the same way that industrywide pricing agreements are outlawed?

These issues need to be faced squarely. To grant and then abridge the strike right by devious means as we are now doing is not only morally wrong but wholly impractical. Large groups of workers suffer from being misled, and all industry lives under the threat of stoppages which the government through the courts may or may not prevent.

■ The Home Front Battle

AT THE moment public acceptance of the European aid and the domestic rearmament programs is high. Recognition seems general that both of these costly ventures are necessary insurance for American security against Communism. But there seems much less public realization of the necessity for taking equally strong fiscal measures to prevent the financial impact of these programs from wrecking the very economic and political freedom we seek to protect.

With spending for ERP and rearmament scarcely begun, the federal budget is hovering around the \$40,000,000,000 mark. No one even talks of it decreasing, and the experts are agreed that another year probably will see federal spending at or above the \$50,000,000,000 a year level. Yet congress, which has talked economy so much, has done little or

nothing to arrest the trend. One by one, spending measures have been approved and congress has even increased some of the administration's requests for funds. What the spending measures which are dealt with separately will mean to the budget in total has been ignored.

Unless there is a complete about-face and drastic economies are instituted when congress convenes after the November elections, either a budget deficit or higher taxes, or both, are inevitable. Resumption of deficit financing would assure further inflation. An increase in taxes, from which there has been far too little relief since the war, would simply be another blow at the initiative of individuals which is what makes the private enterprise system tick.

The only sound alternative, so long as a cold war has to be financed, lies in economizing on unessential spending and deferring expenditures for "social" gains and public improvements, however desirable they may appear. The country simply cannot afford to do everything at once. If the government persists too long in trying to do too much, we may find that the fight to preserve our system will be lost, and not to Russian Communism but to unsound government fiscal policy.

■ Ah Privacy!

THE progress in developing machines to probe the human mind and personality begins to be alarming.

First came the polygraph (lie detector) a few years ago. Then some months ago it was announced that a professor at Harvard had developed an electronic calculating machine, the "Interaction Chronograph" for use in personnel selection. The machine measures four personality traits, thereby revealing to a trained psychologist the type of job a testee is capable of handling. Even more recently, a professor at Northwestern has devised a method for predicting the effectiveness of advertising. Using a highly sensitive galvanometer he tests "psychogalvanic responses," by measuring a person's "bodily arousal and emotional tension" as he or she looks at a series of advertisements. No doubt, with but a little application, revealing human reactions to all sorts of subjects, animate and inanimate, could be registered and measured.

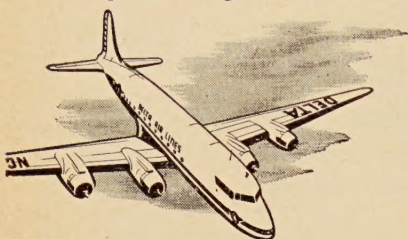
Should such developments continue, the day may come when no secret will be safe if one can be attached to or exposed to a machine. The possibilities, in fact, are staggering. With a little imagination a revolution in the field of human relations, equalling in significance the splitting of the atom to the physical realm, can be apprehensively foreseen.

Alan Sturdy



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HERE-THERE and EVERYWHERE

- **Population Shuffle**—Some 70,000,000 Americans have moved for one reason or another during the past seven years. Reporting upon this abnormal migration, the Census Bureau calls it the greatest internal population movement in the nation's history. Approximately 44,000,000 people changed homes within the same county; 13,000,000 moved to a different county in the same state; 12,000,000 changed states. For businessmen endeavoring to weigh the merchandising implications of this major population shuffle, the Census Bureau has prepared a 29-page report, identified as P-20, Number 14. It is available without charge from the Department of Commerce Field Service, 332 South Michigan Avenue, Chicago 4.

- **Rubber Consumption**—During the last five years, the nation has been consuming rubber at an extraordinary rate, but this year—with the pipelines finally full—rubber consumption is likely to decline. John L. Collyer, president of B. F. Goodrich, predicts that 16 per cent less rubber will be used in 1948 than in 1947. Nevertheless consumption this year will still be 44 per cent above the peak prewar year of 1940. The decline, says Mr. Collyer, will be chiefly due to the fact that war-depleted auto tire inventories have been replenished. Incidentally, fewer tires were sold last Winter because bad weather kept auto mileage down.

- **Resourceful Housewife**—The modern vacuum cleaner is a masterpiece of versatility. It cleans the rugs, waxes the floors, spray-paints the family auto, air-conditions the house, humidifies the sick room, even cleans the dog. The possibilities appeared exhausted until a housewife walked into a Toledo appliance store and advised the dealer she was having exceptional success catching flies with her machine.

- **Japanese Trade Up**—Airline cargo business between Japan and the United States is likely to treble during the next four months following the relaxation of trade restrictions with our former enemy. This is the forecast of Northwest Airlines' cargo director, J.

W. Mariner, who believes a week's all-cargo flight from the Orient may soon be necessary. Japanese merchants, reports Mr. Mariner, are anxious to renew trade with the United States and already have accumulated stockpiles of crockery, porcelain ware, silks, leather goods, novelties, cigarette lighters and inexpensive cameras for shipment when restrictions are lifted altogether.

- **Wage Surveys**—The Bureau of Labor Statistics has instituted two services in the labor-management field. One is a monthly report of current wage changes throughout the industry, issued as "an indicator of wage movements." The other publication, also a monthly, is a report covering all collective bargaining agreements filed with the Bureau in Washington. The latter will indicate the union and company affected, the location, number of workers affected, plus wage and contract changes. Both publications will be available in limited quantities upon request.

- **College Recruitment**—This is the time of year when many companies begin combing college graduation rolls for promising personnel. But, warns the National Industrial Conference Board, companies that will get the cream of June graduates are already conducting campus visits. A board survey of college recruitment policies discloses that hundreds of companies are working harder than ever to select the right college people. Booklets describing the company and its employment opportunities are widely distributed. A third of the companies surveyed give psychological tests to candidates; others rely heavily on personal interviews and scholastic records. However, the board finds that one of the best practices is to give likely candidates part-time vacation employment prior to graduation. Between 75 and 100 per cent of such students with company experience stay on the job once hired.

- **Bad Insurance Risks**—Automobile insurance rates have been going steadily upward since the war, partly be-

(Continued on page 36)

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Trends in FINANCE and BUSINESS

U. S. Produces 54 Per Cent of World's Steel

The American Iron and Steel Institute reports that per capita United States steel production last year was roughly eight times the per capita output for the entire world. Per capita output in this country was 1,180 pounds, against a world average of only 148 pounds.

Belgium and Luxemburg held second place jointly with a per capita rate of 1,124 pounds, followed by Great Britain with 572 pounds, South Africa with 566 pounds, Canada with 472 pounds, and Czechoslovakia with 405 pounds. Although Russia straggled along in tenth place with an output of 232 pounds of steel per capita, the Institute notes that the Soviet Union—like Holland and Denmark—did actually produce more steel than in their best prewar years. Two Western Hemisphere nations that also topped prewar peaks were Mexico with an output of 29 pounds per capita and Brazil with 16 pounds per capita.

The survey placed world steel production at 159,000,000 tons for 1947, of which 84,784,000 tons was produced by the U. S.

Military Budget Means Renaissance For Plane Makers

The outlook for the aviation industry has brightened considerably in recent weeks. After two years of lean military spending, the plane makers are now about to receive the kind of financial support which the industry contends is essential if the United States is to remain a dominant air power. Breaking down the President's original budget requests, plus recently revised military spending proposals, the Northern Trust Company of Chicago finds that well over 50 per cent of the \$14,500,000,000 defense budget will be spent on aviation. The bank further notes that the major equipment programs of the services will be dominated by aircraft procurement. Defense Secretary Forrestal's \$14,500,000,000 defense budget would allocate over \$2,000,000,000 for plane buying (almost double the President's original aviation procurement figure). Meanwhile, the combined services are ex-

pected to spend close to another \$1,000,000,000 in fiscal 1949 for this operation and maintenance of planes already in service.

Package Trends: Attractiveness, Economy, Utility

After surveying more than 1000 companies, the American Management Association reports these probable new packaging trends: (1) packages this year will be redesigned to give greater protection to products and to increase selling power in terms of attractiveness and usefulness to the consumer; (2) packaging costs will be lowered, perhaps paving the way for price reductions of packaged goods; (3) consumer panels, though once popular, will be largely abandoned for more accurate guides to buyers' preferences in packages; new scientific and psychological tests will be used to find the best shapes, colors, and materials; (4) since printing accounts for one-fifth of total packaging costs, many industries will re-examine offset, letter press, lithography, gravure, and other printing processes with a view to economy and artistic improvement.

The big point, according to AMA: "As a major part of their selling effort in the returning buyers' market, manufacturers are planning greater reliance on the use of packaging as the 'silent salesman' to win and hold customers by adding greater convenience, attractiveness, and usability to their merchandise."

17 Million Now Covered By Group Life Policies

Ask any insurance man what has been the fastest-selling policy since the war and the reply will be "group life." It is hard to recall an instance in insurance business history when a particular type of coverage has grown as rapidly. In the last two years alone, the Institute of Life Insurance calculates, group life coverage has risen by \$10,398,000,000, an increase just short of 50 per cent. At the end of last year, some 17,300,000 workers were insured for \$33,168,000,000. The average policy amounted to \$1,900, which—as the Institute observes—was

(Continued on page 26)

NOW—

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P.S.—It's economical too! Here are some typical "station" rates from Chicago:

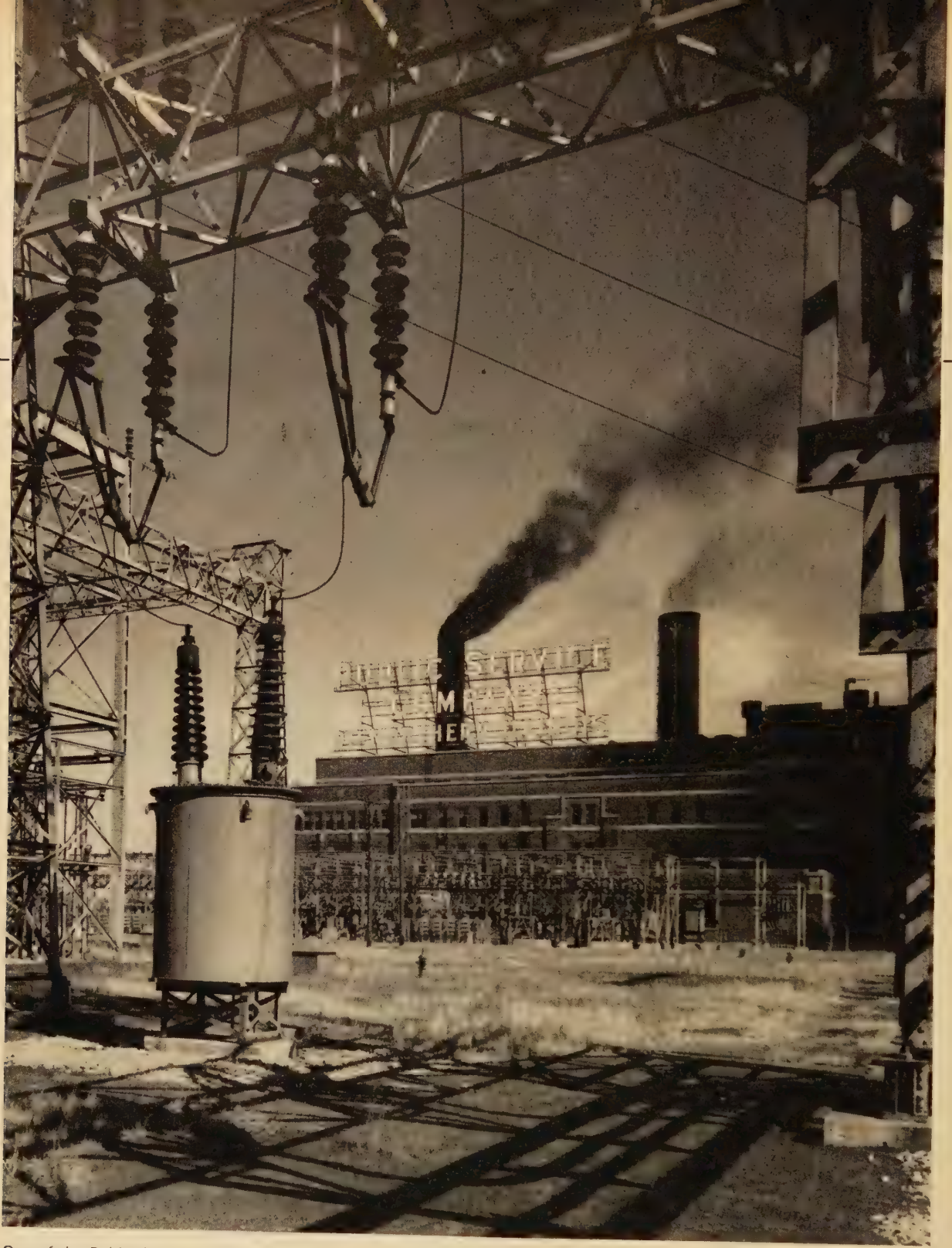
	Weekdays	After 6 P. M. and Sundays
NEW YORK, N. Y. . .	\$1.55	\$1.15
ST. LOUIS, MO.90	.60
DENVER, COLO. . . .	1.70	1.30
CINCINNATI, OHIO .	.90	.60

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Homes, Farms and Factories Are Overtaxing Our Power Plants

Electric Utilities Gain In Race With Power Shortage

By

JOE EGELHOF

AT twilight one day just before Christmas a Chicago housewife switched on her living-room lights and a Nebraska farm woman put her electric range to work. At the same instant, factories and offices turned on more light to lengthen the short December day. Holiday decorations flashed along Main Streets. Extra trolleys went into action to handle the rush of workers from shifts already ended. Trees glittered in Yule colors.

At that instant, the wave of electric power consumption surging across the country reached an intensity never before recorded!

Power men cannot pin down the precise moment. Peak-load days varied in different sections. But, in the aggregate, the pre-Christmas peak loads indicated an active demand of about 49,500,000 kilowatts. Power production capacity was a bare 52,300,000 kilowatts. Power producers had a margin of reserve capacity of only five per cent, compared with 12 per cent a year earlier and 21 per cent two years before.

Dangerously Slim Margin

This was a dangerously slim margin for the electrical systems, which can stockpile power-producing equipment, but not power itself. In some areas service curtailments had to be instituted. Although Commonwealth Edison Company, serving Northern Illinois, had only a shade more than one per cent of its capacity in reserve at the moment the Chicago peak was reached on December 23, it did not have to curtail the service of any customer. The system load, at the peak, soared to 2,378,000 kilowatts against a net capacity of 2,405,000. In 1946, the peak load absorbed 2,250,000 kilowatts of a 2,303,000 capacity. Significantly, last December's record power consumption topped the system's 1946 generating capacity by 75,000 kilowatts.

The margin that enabled the Com-

monwealth Edison system to meet the 1947 load increase was provided by the new 107,000-kilowatt unit, rushed to completion last year at the company's Calumet station. Commonwealth Edison has summarized the present situation in its annual report with the statement: "The companies operated with an inadequate reserve in 1947 and will do so again in 1948. Serious difficulty in 1947 did not occur but, until additional generating units are completed, the possibility of a temporary shortage of capacity will continue."

\$6,000,000,000 Expansion

Some sections, notably middle Atlantic, west central and mountain states, had reserve margins somewhat higher than the central industrial area. But the rising curve of power use, refusing to sink to predicted "peacetime levels," is dictating one of the most gigantic expansion programs ever carried out by American industry.

Even the power companies have increased their estimates of potential electric demand. Last September Charles E. Oakes, president of Edison Electric Institute, said a survey of non-government systems showed they would spend \$5,000,000,000 on expansion by 1951. Last month he raised the figure to \$6,000,000,000.

Here is the statistical story of top-heavy demand: Kilowatt-hour sales in 1947 soared to 217,581,497,000, well above the previous high of 198,160,611,000 in 1944, and double the 1939 total of 105,767,509,000. Generation of electricity by public utilities and government was 255,725,173,000 kilowatt-hours. The total power output, including production by industrial companies and railroads for their own use, was more than 305,000,000,000 kilowatt-hours, 25,000,000,000 above 1944.

Most of the 4,500,000 new customers taken on by the electric power systems since VJ-Day have been "resi-

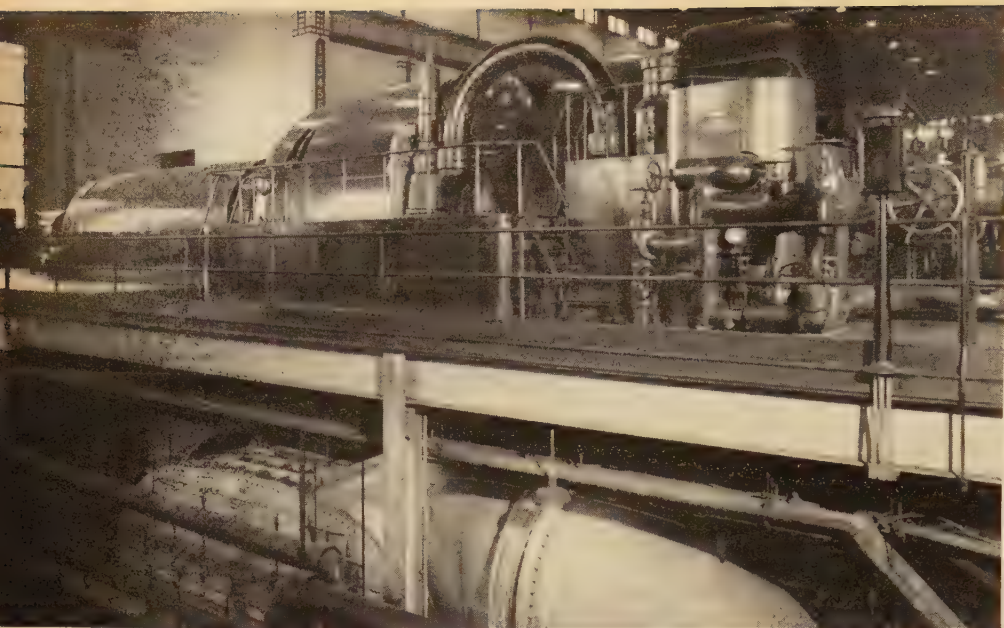
dential," a classification that does not include "rural" families. There were 31,621,959 residential users last December 31, compared with 22,372,385 a decade before. Last year the average residential consumer bought 1,438 kilowatt-hours. Ten years ago the figure was 805, and in 1929 the average was 502 kilowatt-hours.

This spectacular increase in electric power consumption has been largely due to expanding sales of electric appliances. Last year's production was so large, in fact, that appliance manufacturers sold themselves into a buyers' market in all but a few items. This year, a survey indicated that 33,998,000 families had radios, 31,397,500 had irons, 23,819,000 had refrigerators, 27,135,000 had electric clocks, 20,819,000 had washers, 20,275,000 had toasters and 8,500,000 had waffle irons. Actual home lighting now accounts for barely a third of the residential load, while the power appetite of big load-builders like refrigerators and water heaters, is now being bolstered by newer appliances, ranging from dishwashers to electric blankets.

Farms Help Boost Drain

Helping the power boom has been the nation's "rural electrification" program, which should be virtually complete this year. With some 500,000 farms added to power lines last year, more than 3,800,000, or 68 per cent of all occupied farms, are now electrified. Another 14 per cent are located on power lines but are not yet taking service. Ten years ago, there were 1,000,000 more occupied farms, but only 1,215,000 were electrified. Farm electrification has been a big factor in making electricity available to 95 per cent of all American homes. Rural sales in 1947 amounted to 5,550,787,000 kilowatt-hours, compared with 3,668,444,000 in 1945 and 1,670,473,000 in 1937.

The electrification of industry, power's biggest customer, was speeded



Utilities must still wait three years for delivery of mammoth turbines

Korth photo

up during and since the war. "Commercial" customers — hotels, theaters and offices — are taking more electricity because of the development of air conditioning, better lighting and booming business. Last year commercial and industrial users combined used 151,902,485,000 kilowatthours, exceeding, for the first time, the 1944 wartime peak of 145,024,604,000. In 1939 the total was 71,830,376,000.

With the end of the war, talk arose of a serious postwar power surplus. Power men scoffed at the suggestion, contending that the nation's wartime electrical requirements were met only because of the use of three-shift operations by industries, the adoption of "wartime daylight saving," reserve-stretching, inter-company connections, and the full use of old, less economical equipment. The surplus, of course, never materialized. As Charles E. Wilson, president of General Electric, observed recently, "There are no inventories in kilowatthours, no surpluses of produced power to be put on the shelf for a rainy day. . . The only thing that can be stored up in advance is the ability to produce."

A New Power Glutton

True, there was a temporary decline in power sales, but by late 1946 sales rebounded. Peak daytime loading was accentuated by the rapid disappearance of third shifts and the limiting of second shifts.

Now, electronics as a production and research tool looms as a new source of power demand. New power gluttons include such items as 100,000,000-volt betatrons, a 70,000,000-volt syn-

chrotron, a 3,500,000-volt electrostatic proton accelerator, and many other intricate, power-consuming mechanisms.

Meanwhile, several old power markets have also displayed a growing appetite. Street and highway lighting took 1,928,856,000 kilowatthours in 1938; last year it took 2,365,283,000. Other public services took 5,916,354,000 kilowatthours in 1947, double the prewar rate. Railways and railroads used 7,104,502,000, below the 1945 total of 7,354,126,000 but still above prewar.

Reserve Narrowed In 1947

The alternative to a power crisis has become expansion on a huge scale. That expansion began in 1947, although many of the details were worked out during the war. Privately-managed and government plants (less producer-use plants) had a 39,926,881-kilowatt capacity in 1940. They had expanded to 50,110,928 by 1945. The net increase in 1946 was only 192,732 kilowatts, because of strikes and material shortages. But last year manufacturers resumed volume shipments of generating equipment, delivering some 2,800,000 kilowatts of generating capacity. Simultaneously, demand shot up about 4,000,000 kilowatts. About 2,000,000 new kilowatts of capacity was installed and operating by the year end, but the net effect of 1947 was to reduce the reserve margin from 5,300,000 at the end of 1946 to 3,250,000 in December, 1947.

The inventory of the nation's power resources, again excluding producer-use capacity, stood at 52,300,000 kilowatts on December 31. Of the total, public utilities had about 42,000,000,

and government systems roughly 10,000,000.

Not only did the real postwar expansion start last year but the long-term program itself began to crystallize. Money-seeking security issued by the electric utilities became a major factor in the investment banking business. Power systems took more new-plant plans off the shelf and decided they had better order for 1951. Significantly, they had acquired 4,500,000 new customers in two and a half years; it once took 33 years, the first half of the industry's life, to get an equal number.

"Normal Margin" by 1951

Of the \$1,400,000,000 construction spending by public utilities last year, a large proportion was for transmission lines and distribution facilities. This year, expenditures of about \$1,750,000,000 are expected to add more than 5,000,000 kilowatts of capacity, roughly double the 1947 addition. The Edison Electric Institute now estimates the cost of the industry's five-year (1947-51) expansion drive at roughly \$7,400,000,000. The ultimate generating capacity: up 19,000,000 kilowatts.

How will this improve reserve margins? The EEI has estimated that national demand will increase about 3,500,000 kilowatts this year. Against a 5,000,000 capacity increase, the net improvement should be about 1,500,000 kilowatts; hence, the reserve margin should rise to about eight per cent. Against the 19,000,000 addition by 1951, the Institute has estimated that about 13,500,000 more kilowatts of demand will have piled up. Therefore, a "normal margin" of reserve capacity should prevail in 1951.

The power expansion is of vital significance in financial circles. The Edison Electric Institute figures the electric utilities will have to sell nearly \$3,900,000,000 of new securities before 1951. This is about one-seventh of the total expected capital needs of all industry during the next four years. Expansion projects of individual companies provide a vivid story of the nationwide program that is expected to add \$5,400,000,000 in new plant and send \$600,000,000 in wornout plants to the scrap heap.

The Interstate Power Company (Dubuque, Iowa) in a recent securities sale made public expansion plans involving expenditures of \$6,100,000 in the 13 months ending December 31, 1947, \$4,300,000 more for 1949, \$4,000,000 for 1950, and \$5,100,000 for 1951. The New York state power authority is negotiating with the Province of Ontario for joint con-

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Educating Educators On Facts Of Modern Industry

By LEWIS A. RILEY

PROFESSOR CARL M. HORN is a quiet-spoken, young educator whose job is to provide occupational guidance for undergraduates at Michigan State College. His function is not unlike that of thousands of other college counsellors who endeavor to steer young men into worthwhile careers in American industry. The distinguishing thing about Professor Horn is that he, like many a businessman, is convinced that an extraordinary number of educators are still in the horse-and-buggy era so far as their comprehension of modern industry is concerned.

The Michigan State educator might be called a "businessman's scholar," for he contends that school teachers will never grasp the intricacies of our free enterprise system by pouring over the tomes of Mid-Victorian economists. The way to understand industry, he figures, is to get out and watch it operate, ask questions and get direct answers. If teachers don't do this, Horn believes, university students will continue to graduate knowing little or nothing about the industrial system in which they will probably spend most of their working life.

Michigan State Plan

One answer to this problem is the "Michigan State Plan," first proposed by Professor Horn as a campus experiment. Since, the idea has grown into a nationwide program aimed at giving both education and industry a clearer understanding of each other.

Two years ago Professor Horn persuaded Michigan State to institute a series of practical industry field studies. Groups of key educators, drawn from Michigan high schools and colleges, were bundled into buses and whisked off on a down-to-earth study of industry as it really operates. One day they visited a Detroit auto plant, another day a furniture factory in Grand Rapids, another day a union headquarters in Lansing. The educators tramped through plants, chatted with shop stewards, swapped theories with on-the-job training experts, and argued economic philosophies with corporation executives.

What began as a small experiment

quickly became an established statewide practice. As the idea caught on, more educators joined the industrial pilgrimages. Corporation executives were enthusiastic from the beginning and went out of their way to address the visiting schoolmen in person. They talked of employment requirements, training programs, public relations techniques, labor-management relations and a host of other corporation problems. In answer to the question most frequently asked, they told frankly where they believed formal education had fallen down and how it could be revitalized to meet modern demands.

Public Relations Opportunity

For one thing, no Michigan industrialist overlooked the fact that here was an excellent opportunity to present industry's viewpoint on many a controversial economic issue. Their audiences were obviously composed of influential individuals who were shaping the thought patterns of future adults.

The Michigan State Plan is still a new idea in applied scholarship, but already it is beginning to influence educational patterns in that state. Here and there, practical results have already turned up. For example:

With 22 other state educators, Superintendent of Schools A. F. Bates of rural Clare (Mich.) spent a four-week tour asking the question, "Should high schools teach a basic course in labor-management relations?" Finding the answer in the affirmative, Superintendent Bates inaugurated a high school course in the subject last winter. The city's business and labor leaders serve as a steering committee and individual members address classes at frequent intervals.

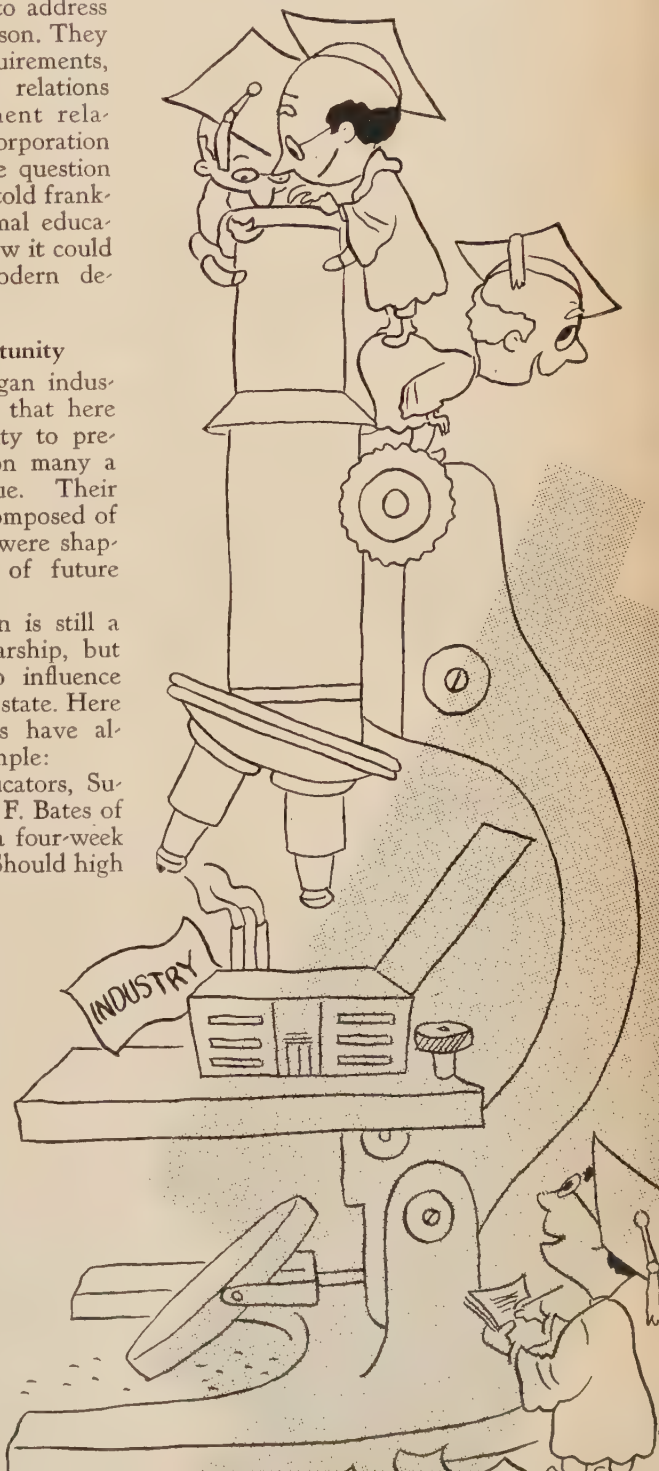
Muskegon (Mich.) high schools introduced a similar study of "Industrial Economics" early this year, after an advisory labor-management

committee blocked out the course.

Impressed by the effectiveness of industrial public relations during the company tours, Superintendent of Schools Walter Scott persuaded his North Muskegon Board of Education to endorse an aggressive public relations policy for the city school system. Commented Superintendent Scott, "We have to tell the public what we are doing exactly as business does."

More than 25 Michigan communi-

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War Research Gives Peroxide



Photos by Acme

Captured German war material which used concentrated peroxide for propulsion

BEFORE the war the use of hydrogen peroxide as a bleach in producing "peroxide blondes" was always good for a vaudeville laugh. Today, as a result of wartime developments, peroxide is no longer a laughing matter. The weak hair rinse has been transformed into a tremendously concentrated power source, and into an important new industrial chemical. If another war comes along, highly concentrated hydrogen peroxide is certain to become a major need of the armed forces. Meanwhile, a variety of industries are seeking economical peacetime uses for the powerful wallop of peroxide.

Many aspects of concentrated peroxide are still under the wraps of military secrecy. Enough has been released, however, to indicate the high potential of this new material. Stored on a shelf, concentrated peroxide is an innocent-looking liquid. When the trigger is pulled, however, by adding a small quantity of a catalyst or chemical stimulator to the peroxide, it immediately is decomposed into 5,000 times its own volume of superheated steam and oxygen. When one pound of concentrated peroxide decomposes, it releases enough heat to raise the temperature of 1,100 pounds of water one degree.

What transformed an innocuous household antiseptic into an intense source of power?

One factor was the necessities of war. The Germans did much of the development work on concentrated peroxide. They needed powerful energy sources for a multitude of applications—rocket airplanes, super-submarines, aerial missiles, torpedoes, and other weapons. So the Germans threw their scientific resources into the development of concentrated peroxide. The Nazis managed to make enough of the new chemical to constitute an extreme source of annoyance to their opponents. By the time the war ended, the Germans had either completed or scheduled enough productive capacity for the new chemical to yield thousands of tons a month.

A Scientific Accident

The other factor was, to some degree, a scientific accident. Ordinary hydrogen peroxide has, of course, been known and used for many years. The normal solutions used in rinses, bleaches, and other home and industrial applications averaged approximately a 3 per cent concentration. The most important use of the chemi-

cal, before the war, was in bleaching textiles, and even there the solutions used were very weak. To save shipping costs, however, the normal commercial product was made in a concentration of 27.5 per cent, and there was a trend prewar toward stepping the concentration up to 35 per cent peroxide to cut transportation expense further. In laboratories, chemists had produced almost 100 per cent pure peroxide; but it was considered a scientific curiosity. The general belief was that high concentration peroxide was extremely unstable, and likely to explode with a loud bang at any time. This belief was, in fact, correct, under the manufacturing conditions then employed.

During the war, however, scientists found that the supposed instability of high concentration peroxide was a result of the prevailing manufacturing methods. Contamination caused the peroxide to decompose easily. Neither iron nor copper vessels can be used in the making or storing of high concentration peroxide, for both metals act as catalysts. Materials that can be safely used for handling and storing the powerful chemical include stainless steel, pure aluminum, glass, ceramics, and some plastics.

Peroxide Fired V-Bombs

If contamination is avoided in making and storing high test peroxide, it is extremely stable. According to chemists of the Buffalo Electro-Chemical Company, 90 per cent peroxide can be stored at room temperature in large aluminum containers with a decomposition loss of 1 or 2 per cent a year. If you spilled some 90 per cent peroxide on your hands, the only result—if your hands were clean—would be to bleach the skin. If your hands were dirty, however, the dirt would act as a catalyst and a severe burn would result.

In Germany, the military value of high test peroxide was realized as early as 1936. Despite a tremendous research effort, however, the Germans were never able to manufacture peroxide in concentrations greater than 85 per cent. Using a different process, Buffalo Electro-Chemical perfected a 90 per cent peroxide, which is now available in quantity.

How did the Germans use this powerful chemical? They found high

Many Peacetime Uses

test peroxide valuable in two ways: as a fuel by itself, and in mixtures with other fuels. The V-1 buzz bombs were launched by peroxide. In the more dangerous V-2, pumps were driven by peroxide—gases from the decomposing peroxide operated a turbine to furnish the power for the pumps.

At least three types of airplanes used peroxide. One experimental plane was powered solely by the potent fluid, by using the steam that resulted when the peroxide disintegrated. In two other German planes—the Me-163, the only rocket-propelled aircraft to be used in the war, the experimental BP-20—peroxide was used with a mixture of other fuels: alcohol and a chemical called hydrazine hydrate, which caused spontaneous combustion when the alcohol and peroxide were brought together.

Used In Rocket Motors

These planes were powered by the Walter engine, a unit that weighed only 220 pounds. The mixture of fuels was more efficient than using peroxide straight, since, in addition to obtaining the heat energy from the decomposing peroxide, the oxygen that resulted burned the other fuels to give additional thrust to the rocket motor. Despite the small weight of the engine, the power it produced was equal to that of a 3,700 horsepower conventional engine.

The results were almost unbelievable. A German rocket plane, powered by the peroxide-fuel mixture, could climb more than five and one-half miles in two minutes. In addition to the tremendous speed, there were other advantages. No ignition system was needed. Not even a catalyst was necessary when the mixture of peroxide, alcohol, and hydrazine hydrate was employed—the mixture was self-starting. And, since the rate of decomposition of the peroxide could be controlled precisely by the rate at which it was fed into the ignition chamber, there was nothing explosive or haphazard about the process. There was one major disadvantage: like most other rocket planes thus far developed, the total flight time was short. And, of course, peroxide as a fuel is much more expensive than petroleum fuels, although this was not an important drawback under wartime conditions.

In submarines, perhaps, the Germans found a use for concentrated peroxide even more important than in aerial

bombs and airplanes. Two years before the war ended, the Nazis realized that conventional submarines were useless against the anti-submarine measures of the United States. Again the powerful Walter engine was called upon. A submarine was designed that had a submerged speed of 25 knots, driven by a turbine powered with a peroxide-fuel mixture. American submarines used during the war had a top speed of eight knots. The German vessels could also remain submerged for much longer periods than the subs previously built. Fortunately, these advanced U-boats had not passed the test stage before the war ended.

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Though an innocent-looking liquid, peroxide powered Nazi super-subs



German rocket plane, the "Comet," was powered with peroxide. Tanks (below) at British rocket site hold hydrogen peroxide.



Opinion Polling for Industry

By

HERBERT FREDMAN



Opinion polls prepare the way for new products, determine consumer preferences

THIS year endless numbers of business men are finding the Gallup, Roper, and other political polls more exciting than a horse race. They are fascinated by the waxing and waning of the fortunes of their presidential favorites; and most of them realize that opinion polling, today, has been developed until it is a scientific method of high precision. Not so many business men realize, however, that opinion research has become an important and valuable business tool. It is a device that can give, if properly used, exact answers to a variety of questions that, in the past, were answered by conjecture, plain guesswork, or outmoded rule-of-thumb formulas.

What do your employees think of your new pension plan? Whether they like or dislike it, why do they feel the way they do? Is there some minor change that could be made to increase the acceptability of the plan? In the broad field of labor relations, opinion polls are proving their usefulness every day.

You are about to bring out a new model of your product. What new features do potential buyers want? Would they be willing to pay more for certain added qualities? Do your present customers have even the vaguest understanding of what your vaunted "tri-

dimensional infra-red gearshift" accomplishes? Customer surveys have proved invaluable to many companies; they have knocked into a cocked hat many notions that were treasured by management, without much logical basis, over the years.

You have just spent a small fortune to produce and send to each stockholder an elaborate annual report. How many read it? Were your pie charts scanned with interest? How many stockholders found the president's letter boring, and turned to the comics in the morning paper instead?

Polling A Skilled Trade

These are only a few of the many ways in which opinion surveys can be used by business firms. They can be used to test sales methods; to measure the effectiveness of advertising media; in all sorts of public relations studies; to determine the shifting sales markets of branded goods. The list could run on for pages.

Since the designing and carrying out of an opinion survey is just as skilled a task as, say, the designing and production of a manufactured product, a number of firms have been established as opinion research organizations. The ones most familiar to

the public — Gallup, Roper, National Opinion Research Center, to name a few — are chiefly known for political polls or studies made of economic and social questions of general interest. There are, in addition, many organizations that specialize in polls for business firms, and these are further subdivided since some concerns apply their research techniques only to special areas, such as measuring the results of advertising.

Many business organizations, of course, conduct their own polls, and employ skilled research men to direct their activities. Such companies include General Motors, Lever Brothers, Procter and Gamble, Eastman Kodak, General Electric, and American Telephone and Telegraph. But most small companies, as well as many of the large ones, find that it pays to retain a professional polling organization to handle their opinion research problems.

Sometimes Polls Go Haywire

For polling, no matter how simple it may appear on the surface, is a highly technical operation, beset by a variety of pitfalls that the layman could not even detect. Consider the popular mail surveys, for example.

In a mail survey, a questionnaire is sent to a list of persons, with a request that it be filled in and returned. Mail surveys, in addition to being comparatively inexpensive, have many other good features. But here are a few of the stumbling blocks that may trip the unwary user of them:

Is the mailing list an adequate cross-section? This problem caused the famous Literary Digest fiasco in 1936, when the presidential poll of that magazine was completely wrong. Even if the mailing list is adequate, what assurance is there that the responses are an adequate sample? Who actually filled out the questionnaire — the person to whom it was addressed, or his secretary? Where the name of the survey's sponsor is known, does that influence or bias the replies?

If mail surveys present some difficult questions, personal interview sur-

veys have even more. Again, the problem of an adequate sample is a difficult one. The question of interviewer bias arises, along with the difficult problem of phrasing a question so that the question itself does not influence the answer. Analysis of the results is not easy. And, more recently, several other annoying problems have arisen to bedevil the lives of research men. Most people, it seems, will answer almost any question; they will boldly take a stand for or against the Taft-Hartley law, for example. But the question then presents itself: How many of the respondents know what they are talking about?

There have also been determined efforts to give opinion surveys a new dimension. Even if you know that your employees divide 60 to 40 on a certain topic, you also want to know why they feel as they do. And, unfortunately, the reasons people give for their beliefs are not always the true, underlying ones.

How, in practice, have polls been used by business? Here are a handful of examples:

What do your employees think of the company, of their jobs? Not too many employers know the answers to these questions. Although it was an oversize job (there are 124,700 members of the Ford employe family), the Ford Motor Company set out some time ago to find out. And, starting from scratch, the auto maker used several opinion research techniques in the task.

First of all, in October, 1946, Henry Ford II sent a personal message to all Ford employes. In it, he said:

"I have a proposal to make. I would like very much to know what you think about many of the specific problems that we all encounter here in making automobiles. It has occurred to me that the best way I might be able to get an expression of your points of view would be to ask you to fill out a questionnaire."

Sampling Employee Opinion

The letter went on to ask that employes return the enclosed forms unsigned (in a postpaid envelope) and that extra, individual comments would be welcome.

The results, at first, were startling. Since it was a pioneer effort, workers were often suspicious. They held the forms up to the light, searching for hidden identification symbols. Oddly enough, it happened that some of the envelopes were addressed by machine after the blank forms had been inserted, and the pressure of the

addressing machine left a faint imprint on the enclosures. This was enough to confirm the worst fears of a handful of workers. Nevertheless, the response to the poll was gratifying. Of 124,700 questionnaires mailed out, 22,461, or almost 20 per cent, were returned.

Few Gripes In Ford Poll

The answers were less pleasing, however. More than 70 per cent said that company personnel policies had been incompletely explained to them, or never explained at all. Almost the same number said little or no effort had been made to make them feel a definite part of the company. More than half asked that some systematic method by which employes could make their views known to management be inaugurated.

On the other hand, 62 per cent believed that "polls of this kind are extremely useful." More than half said they felt free to discuss their work or ideas with their immediate supervisors at any time. And only 7 per cent thought that Ford products compared unfavorably, in value, with those of competitive firms — 53 per cent said that Ford "gives better value for the money."

When the results were analyzed, Mr. Ford sent another message to employes. Among other things, he

said an employe handbook, with information on personnel policies, was being prepared; that a suggestion system was being installed in some plants, and would eventually be extended to others.

Pleased with the results of the mail questionnaire experiment, Ford then called in Elmo Roper's polling organization to conduct anonymous polls at group meetings of employes. Three sample surveys were made — of salaried employes and supervisors in Detroit, and of all employe groups in Chicago and St. Paul. Altogether, about 4,000 employes were covered. The meetings were held in large rooms, and were conducted by Roper experts. Company officials were excluded. Written questionnaires were given to the employes being polled, and the questions were explained in advance.

Factory Rules Relaxed

The results of the Detroit poll were summarized in this way in a headline in the employe newspaper: "Poll Critical of Company but Notes Improvements." These criticisms, also, brought some fast results: the long-standing Ford "no smoking" rule was abolished; timeclocks were no longer used for salaried employes; and, most important, a step was taken to meet

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Coding room at Opinion Research Center speeds ballots to IBM machines for counting





Accumulated demand remains one of the more solid backlogs

Ewing Galloway

How Big Are the War-Built Backlogs Now?

SINCE the war, business has chanted the savory words "record-breaking order backlog." Behind the backlogs have been American consumers, holding the greatest accumulation of disposable income in history and wanting more automobiles, vacuum cleaners, refrigerators, radios and washing machines than ever before. But, the questions arise, "How large are the backlogs now? Would relatively constant production over the next twelve months exhaust the order accumulations and send the hard goods industries into a decline?"

To find answers to these questions,

the Department of Commerce has been analyzing market prospects for five leading consumer durables, each of which was in abnormal demand after the war. The purpose has been to determine the real status of these accumulated backlogs after a two-and-one-half year interval of high production.

In appraising future demand, the Department of Commerce emphasizes the importance of durability. With long-lasting goods like houses and locomotives, demand is more likely to sag sharply in depression periods. Between the last two wars, for example, residential construction varied between

940,000 units in 1925 and 93,000 in 1933. Locomotives showed a variation of 16 to one between peak and poorest years. Consumer durables, which must be replaced more frequently, experienced less drastic fluctuations. Automobiles showed a ratio of four to one in the maximum range of annual sales while refrigerator sales varied only three to one.

Auto Scrapage Down

Among consumer durables that have experienced sharp demand changes since the war, automobiles are the most important. Again, however, the question of durability comes up. Statistics indicate that even before the war the average motorist was tending to keep his car longer. In 1938 the average scrappage age was about 10 years; by today it would probably have increased to 12 years had war not intervened.

The war, of course, upset calculations. Since 1945, there has actually been no net scrappage of cars; the few that were scrapped have been offset by motorists re-using cars which were out of service during the war. Hence, in the last two years alone an estimated 2,500,000 cars have passed normal scrappage age but remained on the road.

In 1946 the auto industry produced only about 2,000,000 new cars, barely enough to meet demand created by normal depreciation and obsolescence. During the same year the unsatisfied backlog of demand for replacement of over-age cars rose by about 2,000,000 more.

Higher production in 1947—nearly 3,600,000 units—made a small dent in the overall backlog, but scrappage (about 700,000 cars) remained low. As a result, the number of over-age cars increased to 5,000,000 or 6,000,000 at the end of 1947. Actually, by mid-1947 there were about 28,000,000 cars on the road, almost exactly the same number as in mid-1941. However, the number of cars 10 years and older rose from 5,000,000 in 1941 to 11,500,000 in 1947, and those 12 years

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New cars now roll off assembly lines at a mounting pace, but demand still rises as owners seek to replace overage cars



Aime

Company Libraries Save Time and Money

By HERMAN H. HENKLE

NOT TOO many years ago typewriters, stenographers, and dictating machines came into business offices for the first time. Not all businessmen leaped to welcome these new-fangled ideas; many continued to write out correspondence in longhand. Today the managers of industry who fail to realize the value of a company library are in much the same position as the persistent penmen of past decades. They are failing to grasp an essential tool for efficient and profitable business operation.

Every product of modern industry has its origins in the applied research underlying the design engineering, tool engineering, and production methods which go into its creation. Underlying all these is the systematic searching of the scientific and technical literature—or library research.

The libraries in which this research is undertaken are of two general kinds: the large research libraries associated for the most part with universities, and the smaller research libraries which have come to be developed in many of our industrial concerns, of which there are almost 150 in Chicago alone. These latter are commonly known as special libraries. It is to this type of library that the business and industrial research worker is turning to an increasing degree for the sources of his information.

Accumulating Literature

The special, or company library, brings together the most frequently used technical literature for the particular company or industry it serves. Through its staff the special library can become a principal source of industrial intelligence. The librarian can help the company's research staff by accumulating the literature bearing upon technical problems or, as is common in the better special libraries, he can actually participate in the library research process. The latter may involve carrying through some or even all of the steps in the process. These steps may include (1) screening the books and journal articles collected in a preliminary search



Portion of the library of the Federal Reserve Bank of Chicago

of the literature to select those bearing on the problem, (2) abstracting the essential data, (3) analyzing this information, and perhaps (4) drawing conclusions and making recommendations based on the analysis.

The great mass of scientific and technical literature available to business is made usable by a number of special tools. Chemical Abstracts, Engineering Index, Industrial Arts Index, Science Abstracts, the *Berichte of the Deutsche Chemische Gesellschaft*, and many other specialized indexes, as well as the subject catalogs of the libraries, make library research speedy and effective.

Almost every imaginable problem is tossed in the lap of a company librarian. The librarian for one of the nation's largest merchandising organizations says "the following problems which we are working on at present are typical:"

1. Collect information covering accurate chemical methods for the assay of estrogenic hormones.
2. Check a "Bibliography on Friction" prepared by a staff member of the National Bureau of Standards (a company engineer is interested in developing a standard method for determining the coefficient of friction between rubber footwear and various surfaces).
- 3.

4. Compile statistics giving the population and number of residential structures in the cities in which the company operates.
5. Secure information on improved methods for packaging and transporting cut flowers and nursery stock.
6. Determine the present status of the milkweed floss industry.
7. Obtain from medical literature opinions concerning the safety of a process of sterilizing baby formulas known as "terminal sterilization," in which the bottles are not sterilized until they are filled with the formula.

Typical Questions

These examples are not extreme. Consider another list of questions asked of a bank librarian:

1. What is the basis for figuring parity prices for various grades of wool?
2. What has been the ratio of national consumption to investment over a period of years?
3. Tabulate the numbers of incoming and outgoing passengers handled by various airports in the country.
4. Furnish information regarding tobacco markets, especially prices brought by various cigaret tobaccos during recent auctions.
5. Provide forecasts of the trend of construction costs.
6. How are government A, B, and C bonuses

calculated that are paid to lead mines that exceed production quotas?

Whether a special library should be established in a company depends on the factors: How much administrative and developmental information is required by company officials? How large is the company's industrial research program? Considering these two factors, how much money is the company prepared to expend for this service? The minimum expenditure for a library cannot be named as an absolute figure. It will vary from perhaps \$15,000 per year upward. Depending upon the other library resources available in the community, it may run as high as \$60,000 per year.

In establishing a company library it is just as important to use the expertness of special librarians as it is to use experts in the establishment of any other department of the company. Expert advice may be gotten by the immediate employment of a special librarian, or through the temporary employment of a qualified consultant.

Librarians' Association

For companies planning to establish libraries (as well as to those that already have them) the Special Libraries Association is an excellent source of aid. The association, with headquarters in New York City, assists firms in finding consultants for the development of company libraries, and maintains a placement service to find positions for its members and to assist member companies in finding librarians.

Special libraries have already been established by many Chicago concerns. In the steel and metal industries, there are Inland Steel Company, Carnegie-Illinois Steel Corporation, American Can Company, and the Continental Can Company. Among the public utilities there are Commonwealth Edison Company and the Peoples Gas Light and Coke Company. Pharmaceutical companies are represented by Abbott Laboratories and G. D. Searle and Company. The variety of other industries having libraries is suggested by those of the Standard Oil Company of Indiana, Pure Oil Company, Crane Company, Swift and Company, Sears Roebuck and Company, Montgomery Ward and Company, the First National Bank, the Continental Illinois National Bank and Trust Company, Leo Burnett Company, and many others. The staffs of company libraries may run as high as a dozen persons or more.

The company which has no special library or which makes no contribu-



Korth photo

Herman H. Henkle

tion to the support of services available through other libraries in the community should not suffer the delusion that it is obtaining its technical information without cost. It is probably paying double for no industry can operate profitably without an inflow of current technical information. Where library service is lacking, high-priced personnel, usually unqualified to conduct literature searches, are probably spending valuable time at this operation. It may cost a company even more to miss the information it should have. Only a brief glance at the magnitude of scientific and business literature is sufficient to accent the possibility of this loss. There are thousands of currently published scientific and technical journals issuing from all parts of the world. Even in the narrowest field of research several hundred scientific and technical journals may contain information of importance to a particular research problem.

What is the relation of the company library to other research libraries of the community? This can best be illustrated by the nature of library use. For any given field a relatively small number of technical periodicals will provide a large percentage of the currently published literature. In terms of intensity of use the largest percentage will involve the most recent five or ten years of the periodical literature.

Economy Selections

Obviously the greatest economy is realized in a company library when the journals acquired by subscription are limited to the most frequently used titles, and where the warehousing of back files is limited to the last five or ten years of each journal title. But the point to be emphasized is that a great saving in investment, as well

as upkeep, can be realized by limiting the collection of the company library to material most frequently used. The problem of developing the collections and services of the large scientific library as a center for industrial research is one which has received increasing attention in a number of cities during the past years. In Chicago, for example, the John Crerar Library has undertaken to carry out a service program in this field. It is doing so with financial support from many companies whose research or development programs require intensive use of a technical library.

In the light of the services and collections offered to industry by Crerar, it is important to understand the relationship of this large scientific library to the libraries in the industries which it serves. Ideally, the central research library should supplement rather than compete with the company library. This supplementary service is of two kinds.

First, the central research library serves as the repository for the great mass of scientific and technical literature which must be readily available to the industrial research worker even though much of it is used very infrequently.

Central Library Helps

Second, the central research library can supplement the company library by giving bibliographical services that require a wider range of publications than are available in the company library. It can also give more intensive research information service in areas lying outside the primary problems of the company when the research library has personnel qualified for such service.

For the smaller companies and for the larger companies whose research and development activities are not sufficiently extensive to justify the maintenance of a company library, the central research library can do the whole job.

Whatever the source of information to which the company turns—company library or central research library—it must have a constant flow of information. "Intelligence" played a major role in the winning of the second World War. Intelligent use of "intelligence" has played an important role in the development of modern industry. The vast and complex sources of information now in print make the use of research libraries either in companies or in large central scientific libraries imperative to the effective use of business and technical knowledge for the industries of tomorrow.

Federal Taxes Block Corporate Equity Financing

By EMIL SCHRAM

President, New York Stock Exchange



Emil Schramm

THE NEED for an abundance of risk capital in the coming several years goes undisputed. Business management faces one of its most important problems in soundly financing its new money requirements. There are unnecessary obstructions in the path of the flow and function of risk capital that must be removed if, in the years to come, we are to avoid governmental interference in the conduct of business. I refer to the double taxation of dividends, the treatment of capital gains, and the discriminatory margin requirements.

I wish to open my brief remarks with a blunt statement of fact which I shall endeavor to support. The life insurance companies are making loans today which, in my judgment, belong in the commercial banking system, while the commercial banks, I think, are advancing credit where the funds should be obtained in the equity markets—and both these conditions have been forced upon these lending agencies because the capital markets have not been in a position to provide the necessary funds. I consider this condition and the trend which it has set in motion of vital concern. They are matters which should engage the study of our officials, the congress, and the leaders of industry and finance.

A Dangerous Tendency

The dependence of business enterprise on insurance companies, particularly life insurance companies, for new money is a dangerous tendency. It is more dangerous because our tax laws encourage the tendency of business to finance through debt securities. The continuance of this trend is likely to raise grave questions when business conditions are not as favorable as they have been in the past two years. In contrast, the diffusion of the ownership of industry among as large a body of individuals as is possible promotes flexibility for management and the spread of direct interest in and knowledge of the workings of business. In 1947, net new security issues, i.e., new issues less

retirements, amounted to \$4,100,000,000. Life insurance companies purchased \$3,000,000,000 of these securities, or approximately 73 per cent of the total. In 1946, when new security issues aggregated \$2,300,000,000, a total of \$2,000,000,000 or 87 per cent were acquired by life insurance companies. When to this is added another large source of corporate funds, bank loans which amounted to \$3,700,000,000 in 1947 and \$1,400,000,000 in 1946, it is readily seen that after having painfully started to pare down the public debt and balance the budget, we now seem to be engaged in rapidly swelling the debt of business.

Risk Capital Scarce

According to a recent report of the United States senate finance committee, released in connection with the enactment of the revenue act of 1948:

"Life insurance companies are taking a very large proportion of the new securities, while individuals, who must be the chief source of risk capital, are buying a relatively small proportion. The life insurance companies and banks, which must place their funds in securities with a low degree of risk, accounted for 83 per cent of the net purchases in 1947, and were the only net purchasers in 1946. On the other hand, domestic individual buyers accounted for none of the net purchases in 1946 and only 17.1 per cent in 1947. This is still another indication that those buying securities today are for the most part seeking relatively riskless investments."

I pause here to pay my respects to the leadership in the congress that made possible a splendid beginning in

SPEECH OF THE MONTH

(Condensed)

Made before the Economic Club of
Chicago, May 18, 1948

correcting some of the injustices of our wartime tax structure.

I have dealt elsewhere on a number of occasions at some length with the broad question of double taxation of dividends, the need for stimulating the flow of savings that properly find their way into ownership securities and their activation in the capital market. Important benefits would be derived from changes in capital gains taxes in the direction of a liquid, orderly and continuous stock market. This leads me to margin requirements because a 75 per cent margin effectively adds to the mounting tendency to which I have already referred. It requires a little explanation to make it clear how the reduction of margin requirements would not aggravate inflationary pressures.

Reduced Incentives

Let us take as an example a company with 500 stockholders which requires \$5,000,000 in new funds. Right now it is attractive to borrow the money from an insurance company or from a commercial bank on a term credit basis. Although we would always expect to have a differential between the cost of raising senior capital and equity funds, the difference is extraordinarily wide today because of the reduced incentives to participate in industrial ownership. However, even the reduction of margin requirements to 50 per cent would be helpful because the sale of stock would shift the operation so that the debt created would be half of the \$5,000,000, assuming the stockholders used their own funds to the extent of \$2,500,000 and borrowed the same amount from banks. In addition to stimulating ownership capital and cutting down the amount of credit, the process would diffuse the ownership of

the debt from one or possibly two institutions to the banks in the different localities in which the shareholders reside.

The Federal Reserve authorities at various intervals have spoken out on this question of risk investment in the banking system. The Federal Reserve Bulletin of October carried the address of the former chairman "Postwar Bank Credit Problems," which said in part:

1. "Maintenance of a high degree of liquidity should be encouraged; banks should be discouraged from reducing their large holdings of government securities and cash assets in order to acquire less liquid and more risky assets.

2. "Supervisors should take a critical attitude toward any expansion of loans, unless they contribute directly to increased production and movement of goods. This attitude should apply particularly to consumer credit, real estate loans based on inflated values, loans to carry excessive inventories, and any loans for speculative purposes.

3. "As long as banks maintain their present large holdings of cash and government securities, most of them are adequately capitalized. Banks with low ratios of capital to risk assets, however, should build up their capital. If banks persist in increasing their risk assets, they should be required to enlarge their capital accordingly by retention of earnings. If retained earnings are not sufficient, then additional stock should be sold."

It is all very well to talk about adding to the capital of our banks. I agree that the private commercial banking system is under-capitalized. This is especially true if we regard the present level of prices as a rather permanent fixture within our economic structure for many years to come. The fact is that there is scarcely a commercial bank stock that is not selling in the open market today for less than the known book value of the stock. This presents a decided difficulty on the part of the banks in raising new capital through their existing stockholders, and I might add that without prohibitive dilution of the present stock, it is impossible to attract new owners into the industry.

Private Funds Essential

Ours is a great industrial empire that is capable of producing a vast amount of goods, an economy capable not only of supplying the wants and needs of 140-odd millions of its own citizens, but capable as well of shipping abroad, on balance, surplus production. This empire has been built by private funds; that is the only way we want it and the only way we should have it. I make that statement with all the force at my command, even though at one

time I headed the largest lending agency of the government which came into being in an acute emergency, and which in my belief should function only in such a period. I am thoroughly confident that our corporate structure is in need of tremendous sums of equity capital if for no other purpose than to pay off private debt.

Investment Advantages

With our federal debt in excess of \$250,000,000,000 and the additional public debt (made up of states, cities, towns and counties all over the land) totalling approximately \$14,000,000,000, with a tax load that gives promise of exceeding \$40,000,000,000 for the federal government in the coming fiscal year, and upwards of an additional \$11,000,000,000 for the support of our states and their subdivisions—we should not build up the private debt of the country unnecessarily, except as a temporary accommodation. There is an exception in the case of the railroads and the public utilities, but as for the other business interests of the country, almost without exception, capital should gradually evolve into preferred and common stock, preferably the latter.

It is not only for the sake of our financial structure, public and private, that I make this point; it is because I am a firm believer in the rights and advantages of ownership on the part of all of our citizens, whether they be well off or of moderate means. There is a certain something, by way of better citizenship, that accrues to the nation from the privilege of ownership. That is why it is the duty and responsibility of every public official and of the congress to safeguard and protect the property rights and rights of ownership if enterprise as we know it is to endure. The payoff is in the pleasure of living in freedom and liberty.

We have government agencies—the Interstate Commerce Commission, the Federal Power Commission, the Securities and Exchange Commission, and other agencies of regulation such as the Federal Reserve Board—all of which I think go far enough in certain forms of regulation in the public interest. We are in an enormously expansionary period. We are dealing in astronomical sums. We have no past yard-sticks with which to measure the future growth of this country. That is particularly true as we strive to improve the standard of living of our people. We must not harass the investor and place unnecessary obstacles in the path of the free flow of investment funds from one market to another. Our primary interest is the private placement of the federal debt at a rate of return which the congress thinks is sound and within the bounds of the budget. Once this is accomplished other

parts of the capital and money market will fall in line.

Our life insurance companies should lend the main support to this task especially in the case of the long-term government debt. The savings banks likewise should continue to filter these funds to the medium and long-term government indebtedness. Our commercial banking system is the logical chief buyer of short-term government obligations. I want to see a broad active stock market reflecting our pre-eminent world position. This statement does not imply a rising and falling market. I am not here to predict the course of values. The stock market is the best confidence barometer we have in this country. On the New York Stock Exchange, the largest open free capital market in the world, we have listed today almost 2,000,000,000 shares of the preferred and common stocks of 1,133 of our large, medium sized and relatively small business establishments. These businesses employ millions of people at an investment of from \$3,000 to \$39,000 per employee.

Tax Reform Needed

I am unalterably opposed to a capital levy in the form of the capital gains tax. It is a definite barrier to the fluidity of funds. To press the point, income is one thing—it is the earning capacity or power of every individual to make money, either through his personal efforts, by his mind, his hands or his accumulated resources; and beyond that income he must rightfully pay his just taxes to support his government. Once the citizen has paid his just taxes on his current annual income and is able, after paying his honest debts, to lay aside a nickel, that nickel should not be taxed during his lifetime if he is prudent and fortunate enough to double or treble it.

We must follow a policy of encouraging the broadening of the base of wealth of the country from which income springs. Tax the income, not the savings or principal, during the lifetime of the individual. Give him that much-needed tool to work with, for it is in the interest of every laboring man in this country that we save and that we put our savings to work productively. I want to see the capital gains tax reduced by this congress in the coming several weeks, should the Congress enact a second tax bill, from the maximum rate of 25 per cent to 12½ per cent. I want to see margin requirements, or the privilege of an investor to borrow on the common stocks representing his ownership in American industry, reduced from 75 to 50 per cent, provided the banker or lending agency will give him the 50 per cent. The 75 per cent margin requirement, is really

(Continued on page 34)

Stops sludge and gum on this tough job...



W. Ray Clark (left) and Buford V. Everett (right), Contractors, of Plattsburg, Missouri, examine clean oil screen and crankcase in one of the hard-worked engines in their quarrying equipment. They report that Stanolube HD ended sludge and gum trouble, reduced engine upkeep.

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Heat, dust, heavy loads, and the continuous operation of engines put any motor oil in a tough spot. Under just such conditions Stanolube HD is successfully protecting the trucks and quarrying equipment of Everett & Clark, Contractors, Plattsburg, Missouri. W. Ray Clark writes:

"We have used this oil for the past three years (in both gasoline and Diesel engines), and we have found that the upkeep on engines of all types has been greatly reduced. We have found that Stanolube HD is the one lubricant that keeps our engines free

of sludge and gum."

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STANDARD OIL COMPANY (INDIANA)

**STANDARD
SERVICE**

Trends In Finance and Business

(Continued from page 10)

"an important addition" to other insurance and savings protection enjoyed by workers' families.

This form of coverage is expected to continue its rapid expansion. Group life purchases in 1947 were the largest in history, and during the first quarter of this year purchases increased to \$598,360,000, up nine per cent from the similar period last year.

**John Q. Public
Has Switched
To . . . Beer**

As any bartender knows, folks have been drinking less Scotch, rye, and bourbon, and considerably more beer lately. The Licensed Beverage Industries has now confirmed this trend from hard to hop drinking with a report on 1947 tax collections. The tax take on distilled spir-

its was \$1,600,000,000, down 20 per cent from the \$2,000,000,000 level a year earlier. Wine tax receipts were \$50,000,000, off 34 per cent from the 1946 figure of \$77,000,000. Beer taxes, on the other hand, climbed 9.3 per cent, rising from \$642,000,000 to \$709,000,000.

« « » »

**Marriage By 30
Is Four To One
Probability**

About three out of four American males get married before 30 and nine out of 10 walk, or are walked, to the altar by the time they reach 45. There is considerable economic significance in this fact as the Census Bureau assures us in a new report on nationwide matrimonial tendencies. Further disclosures: there are relatively fewer unmarried men and women to-

day than at any time since 1920; in the 20-45 age bracket, 33 per cent of all men were single in 1940, but only 26 per cent in 1947; in the same age group, 22 per cent of all women were single in 1940 against 17 per cent in 1947.

This growing acceptance of marriage as a reasonably gratifying mode of living has been apparent for half a century, the Bureau notes. War accelerated the trend, but war alone has not been wholly responsible. Record economic activity and high-level employment have also helped reduce the bachelor ranks.

« « » »

**Strong Demand
Responsible For
Steel Shortage**

Apparently it will be a long time before the shortage of sheet steel disappears. Among the reasons, reports the Armco Steel Corporation, is the fact that use of sheet steel is growing at a tremendous rate. For example, the average 1920 automobile consumed 800 pounds of sheet and strip; today's car takes three times as much. The average 1925 stove was 45 per cent sheet steel by weight; today's stove is 86 per cent sheet. The 1920 ice box required virtually no sheet steel; today's model takes 220 pounds. The average 1940 furnace was 32 per cent sheet steel; now it is 77 per cent. Bathtubs and sinks were 12.5 per cent sheet steel in 1940; now they are 42 per cent sheet steel.

« « » »

**Competition For
June College
Graduates Keener**

Companies planning to hire June college graduates will find the competition for such personnel slightly stronger this year and salary requirements higher. This is the forecast of Northwestern National Life Insurance Company which has found in a survey of graduate employment trends that starting salaries have doubled since 1939 and are generally \$10 to \$25 above last year. Last January's graduates in business administration and other non-technical fields have been hired at \$200 to \$235 a month (\$95 to \$110 pre-war); engineering graduates command \$240 to \$275 (\$135 to \$150 pre-war).

Employment opportunities for January graduates, the insurance company found, were probably a little better than a year ago; engineers and accountants continued in strong demand and sales-trained students found the employment market distinctly brighter. Meanwhile, a backlog of A-grades is becoming more and more important in finding a good job. Says the company, "It now takes a little more work to line up satisfactory jobs for the lower two-thirds of the class, while the upper third have several jobs to choose from."

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Opinion Polling

(Continued from page 19)

the complaint that employees did not receive enough information about the company. This move was the inauguration of a series of management meetings, held monthly. At the top level, company officials meet with about 150 men to discuss current company problems. Next, these 150 participants meet with groups at the next level of management to report on the discussion. Eventually, after a series of meetings, the information filters down to about 12,000 supervisory employees, and from them to all workers.

Ford has been highly pleased with the results of polling in bringing out the complaints and grievances of workers, as well as the aspects of the company that they like. And the company's industrial relations department intends to continue to use this modern management tool.

The Letter Contest

Another auto maker — General Motors Corporation — hit on a novel method of discovering what its employees were thinking. Three years ago G. M. set up an employee research department. According to L. N. Laseau, director of the department, "Our job is to find out what our employees are thinking and why. As usual, anything that sounds that simple is quite complex. For the first two years of our existence, most of our time was spent studying currently used opinion and attitude survey techniques.

"In searching for a method of gathering employee thinking that would be devoid of this bias, we have come upon the employee letter-writing contest. The one which we completed in December among our employees seemed to be an extremely successful morale builder. We are now in the process of analyzing the material received in the 175,000 entries made by 60 per cent of our eligible employees, so it is too early to say how much this material will produce that will be of value for research work."

How did a letter-writing contest qualify as an opinion research project? C. E. Wilson, president of General Motors, answered that when, in discussing the contest, he said:

"One of the most important results of these letters is the education of management itself. Every manager, every man who is responsible for supervising the work of others, should read and study these letters carefully. No one can read and study them without gaining a better insight into the

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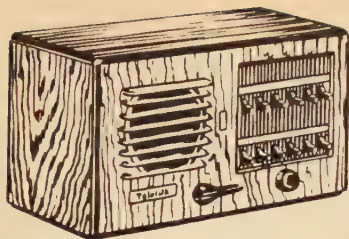
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minds and thoughts and aspirations of the people in the plants, laboratories and offices."

Employee research is a fairly new activity for General Motors. But the company has been using opinion research for many years in another field — finding out what customers want and think. The first customer surveys were actually made more than 25 years ago, but in 1933 the activity was expanded and set up as the customer research department. This department, each year, contacts roughly 3,000,000 motorists to discover the views of automobile users on various features of design, construction and styling of motor vehicles.

"It is the purpose of customer research," Henry G. Weaver, director of the G. M. customer research staff, says, "to find out just what it is that the customer is right about and to find out just what it is that he may be wrong about. . . . It is just as important to learn the facts about the errors of public thinking as it is to learn about the correctness of public thinking, and it is difficult to see how you can direct advertising and sales activities along the most efficient and intelligent lines unless you know something about what's in the public mind to start with."

G. M. Techniques

In actual practice, the G. M. customer research staff makes 20 to 30 surveys in the course of a year, contacting motorists who own all makes of cars, in all price classes, and located throughout the country. Most of the surveys are mail questionnaires, but personal interviewing is used to cross-check the mail results. The surveys vary greatly — as many as 1,000,000 of some surveys may be mailed, and fewer than 1,000 of others. The questionnaires themselves are subject to constant experimentation — they differ in format, style, typography. But all are aimed at finding answers to two questions of vital interest to G. M.: What does the buyer want in the way of a product? And how does he want the product "served up" to him?

An interesting aspect of General Motors' customer research is the use of "motor enthusiasts." While most of the questionnaires are distributed widely, each year 15 to 20 special surveys are made of a group of special correspondents who are known to be persons who make a hobby of motoring. The results of these special surveys are compared with the general studies to determine what the average motorist will be thinking at some time in the future.

In dealing with the "motor enthusiasts," G. M. has developed a new type of questionnaire that promises to be especially successful. Designed for use in connection with fairly complex aspects of engineering design, it works like this:

First, the feature or trend is described in detail, with illustrations if necessary. Next, favorable and unfavorable aspects of the subject are listed. Then the respondent is asked to criticize these pros and cons, and to add any points he desires. After this, the respondent is asked to cast his vote on the proposition, and finally he is asked why he voted the way he did — which of the arguments were most important in leading him to the decision he reached.

This type of questionnaire, General Motors believes, has great possibilities in forecasting future trends "because it concerns itself — not with existing attitudes — but with what the attitudes will most likely be after the motoring public — through experience or otherwise — has come into possession of full and complete facts." And Mr. Weaver of G. M. thinks that a similar technique might be effectively employed in opinion research on economic and social problems in addition to the conventional polling methods.

Constant Need To Experiment

As have many other companies that have pioneered in opinion research, General Motors has found it necessary to experiment constantly with new techniques — for the human mind still cannot be measured with a yardstick or calipers. For example, in preparing questionnaires, G. M. has been helped by such widely differing sources as mail order catalogs (for effective examples of descriptive writing and illustrative techniques) and legal text books on cross examination.

Another pioneer in the use of public opinion research is American Telephone and Telegraph Company. A customer opinion survey was made as early as 1925, and in 1929 a unit was set up to determine possible applications of opinion survey techniques to Bell System problems. In the last 20 years the Bell System has made hundreds of opinion studies in large cities, small towns and rural communities, and the views of more than 500,000 persons — representative of many millions — have been obtained.

According to Arthur H. Richardson and C. Theodore Smith, who are in charge of opinion research for A. T. & T., these are some of the ways that opinion research has been useful to the Bell System:



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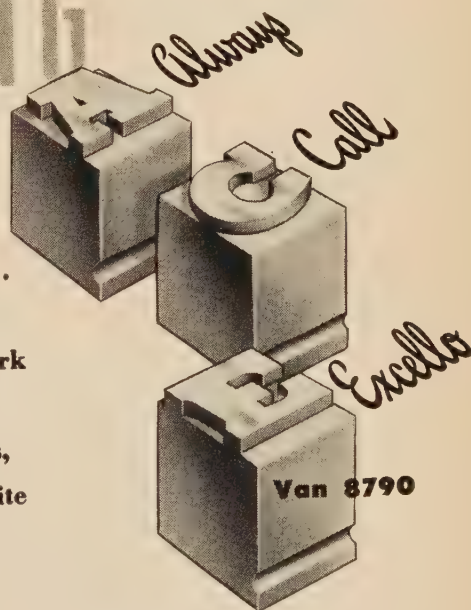
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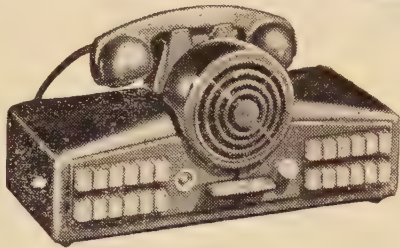


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Bell System Methods

A variety of methods have been used to obtain attitude information from the public by the Bell System. Not surprisingly, telephone interviews have been used extensively; the company has found that customers feel it is appropriate for the Bell System to use the phone in interviewing them about their service. Mail surveys, face-to-face interviews, and "leave-and-pick-up" questionnaires have also been used. In the latter method, a form is left with the customer to be filled out; later the same day or the following morning, it is picked up. This is a comparatively new procedure (it was first used in 1943 by Bell) and it has certain advantages over both the conventional interview and mail methods. It is speedier than interviewing, requires a less skilled field force, and interviewer bias is largely eliminated. On the other hand, a much larger percentage of completed forms is likely than in a mail survey.

The Bell System has found opinion research to be exceedingly valuable. Results of the surveys are used in many ways. Employees are informed of the results of the surveys through bulletin board posters; motion pictures; booklets; articles in house organs; and other media. The results are sometimes reported to the general public in magazine and newspaper advertisements. Special reports for supervisory employees analyze public opinion of telephone service.

Opinion research, the Bell System finds, "can be of particular value at a time when new problems are arising and previously established precedents

(Continued on page 42)



Invest in the MIDDLE WEST

Reviews of Middle-western Companies

By LEWIS A. RILEY

IN VERDANT Polk County, Florida (orange and grapefruit groves, winter playgrounds), huge grinders and pulverizers began turning one day last March in the biggest, and probably the most efficient, phosphate plant in the Western Hemisphere. From the yellow slime that churned through its new \$10,000,000 Noralyn plant, International Minerals and Chemical Corporation was confident of extracting 1,500,000 tons annually of the fertilizer component that continues in topheavy demand in the United States and in desperate need among hungrier nations abroad.

As International bit into the surrounding phosphate bed—one of the richest ever discovered—another major step in a six-year expansion program that has transformed a relatively unprofitable fertilizer concern into a leading mineral and chemical producer neared completion. During the same half-decade, International's sales have climbed from \$15,071,643 in 1941 to \$41,302,250 in 1947, earnings from \$479,231 to \$3,826,992, and common stock earnings from a meager 11 cents a share to \$4.35. Prior to 1939, a dividend had never been paid on the company's common stock.

With the new Noralyn plant, plus two older mines in the same mid-

Florida area, International is virtually assured an annual phosphate output in excess of 3,500,000 tons. The new capacity will account for about 40 per cent of total U. S. phosphate production and exceed the pre-war output from all Florida. Efficiency-wise, International after years of research is also confident of recovering more than 92 per cent of the phosphate in the Noralyn bed. In the early days the record rate was 65 per cent.

Phosphate is the backbone of International's business. But only a few months before Noralyn came into operation the company's attention was focused 2,400 miles westward where, at San Jose, Calif., the amino products division was opening a new \$3,500,000 plant for the production of monosodium glutamate, a flavor accentuator used by food manufacturers, hotels and restaurants. Opened late last year, International's far-western wing climbed to 105 per cent of rated capacity by January, 1948.

Hardly was San Jose out of the tune-up stage before International announced last December that its expanding potash division would begin building a \$1,250,000 refinery this year at Carlsbad, N. M. The object: to step up production of chemical-grade muriate of potash and high grade potassium sulphate, both essential to industrial chemistry. On still another sector, the company's orig-



Mining phosphate with dragline excavator at International site in Florida

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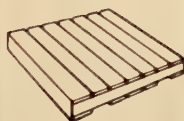
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inal fertilizer division was going ahead with the construction of new mixing plants at Somerset, Ky., and Winston-Salem, N. C. When completed, they will provide International with 333 fertilizer plants in 16 states.

Though big in terms of dollars and geography, International's growth has not been a case of expansion alone. Each new capital investment has been keyed to a diversification plan inaugurated just before the war at the company's Chicago headquarters. Diversification, rather than expansion, has been the primary force behind the plan; the goal has been to "depression-proof" the corporation as much as possible. Organized in 1909 as the International Agriculture Corporation, the company was chiefly engaged in fertilizer and phosphate rock production until 1939. As such, it was closely tied to the agricultural community. When farm income skidded, International's profits were sucked down as well.

Diversification Drive

Architect of International's revitalization has been Louis Ware, who became president in 1939, and promptly set out to diminish the corporation's dependence on agricultural prosperity. To spark the diversification drive, Ware broadened the company name to International Minerals and Chemical Corporation, then moved quickly into industrial and food chemicals. A few months later, International acquired control of Union Potash and Chemical Company of New Mexico and greatly expanded production when it placed a new \$5,000,000 mine in operation near Carlsbad in 1940. From no production at all, International has since grown to the point where it is among the Big Four of the potash industry (along with Potash Company of America, United States Potash Company and American Potash and Chemical Company). The four companies combined turned out in excess of 98 per cent of the nation's production.

The corporation has now broadened operations to include the production of chemicals for industry. The list includes potassium chlorate for manufacturing matches, fuses, fireworks, flares, munitions, and other pyrotechnic materials, silica gel, a drying agent used in shipping metal goods, refrigeration, and the drying of gases and sodium silico fluoride, used in commercial laundries, insecticide manufacturing, and metallurgy, and magnesium sulphate (epsom salts) used for medical purposes and in industry to deluster rayons.

Following its move into the potash field, International bought the Amino Products Company of Toledo, Ohio,

in 1942, and thus stepped into a second new field, food chemistry. The Toledo plant converts wheat gluten into flavor-intensifying mono sodium glutamate; the company's recently opened plant at San Jose manufactures the same product for commercial and home use from waste purchased from beet sugar manufacturers. Chinese restaurants buy mono sodium glutamate by the tradename "Mei-Wei-Fen" ("spirit of the flavor"); Japanese restaurants buy the same product as "Shirayuki" ("white snow"); in the American market it is called simply "Accent."

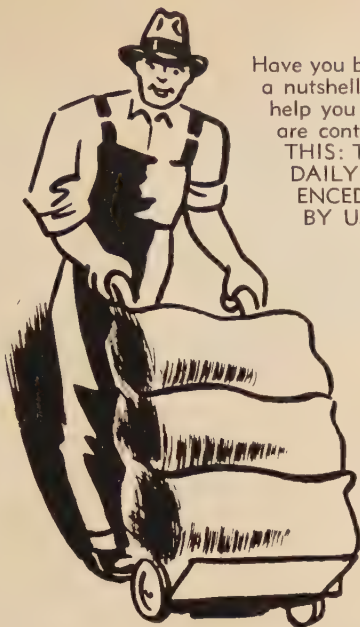
The amino division has been the weak link in the International chain; it has yet to show a profit. Ware and associates are confident, however, that mono sodium glutamate is a potential money-maker and they have nursed the division through several years of costly experimental work. With San Jose in operation, International now has an annual capacity of more than 7,000,000 pounds of MSG annually, making it the largest producer in the country. Domestic and foreign markets are both growing. At the same time, the company expects to sell increasing quantities of its other amino products for pharmaceutical purposes.

Farm Sales Spurt

Meanwhile, International's plant food division has boomed along through six years of unprecedented farm prosperity. The company sells about 80 per cent of its potash and phosphate to other concerns, retains the rest for fertilizer production and other products. It is the only fertilizer manufacturer which produces both basic ingredients, phosphate and potash. With fertilizer in backed-up demand throughout the world, International has steadily expanded its investment in new manufacturing facilities. Since 1943, it has built two new sulphuric acid plants to boost super-phosphate production; plus new fertilizer mixing plants at Pensacola, Florida, and Mason City, Iowa. Two additional plants will begin operations later this year.

This expansion has added significantly to the company's investment in plants and equipment. During the first year after the war, International thus spent \$5,324,128; last year it increased capital outlays to \$7,740,734 and this year's investment in new facilities will probably hold near this level. Thanks to steadily rising earnings and favorable financing, the company has been able to keep working capital on the upgrade.

As of the end of the last fiscal year, June 30, 1947, International's balance sheet showed current assets of \$13,954,329 and current liabilities at \$2,609,755—a ratio of more than five to



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one. Net working capital amounted to \$11,344,574, as compared with \$11,337,283 in 1946 and \$6,601,341 in 1941. Fixed assets—increased principally by plant and machinery purchases—rose to \$32,194,094 as compared with \$26,350,841 in 1946 and \$18,047,305 in 1941, before International's expansion program got under way. Total assets were \$47,089,432 in 1946, compared with \$40,843,705 a year earlier.

Since 1939, the company's capitalization has undergone a thoroughgoing reorganization in which 100,000 shares of 7 per cent preferred stock, carrying a large unpaid dividend accumulation, and over \$3,000,000 in first mortgage bonds were retired. The new outstanding capitalization consists of a 17-year \$12,000,000 loan obtained from an insurance company at $3\frac{1}{4}$ per cent; \$1,250,000 of $2\frac{3}{4}$ per cent notes payable by 1957; 98,730 shares of \$100 par value 4 per cent cumulative preferred stock, and 788,155 shares of \$5 par value common stock. As of June 30, 1947, capital surplus was \$14,512,683 and earned surplus was \$8,278,219.

The following table shows the growth in sales and net income since the company undertook its expansion and diversification program:

Fiscal Year Ended June 30	Net Sales	Net Income After Taxes	Net Income Available for Common Stock Per Share*
1947	\$41,302,250	\$3,826,992	\$4.35
1946	34,373,106	2,925,657	3.21
1945	30,301,091	2,038,169	2.08
1944	27,348,668	2,016,037	2.06
1943	22,477,375	2,081,738	2.14
1942	18,122,891	1,687,772	1.64
1941	15,071,643	479,231	.11

*Based on shares outstanding at June 30, 1947.

During the current fiscal year, sales and earnings have continued their up-trend. For the nine-month period ending March 30, 1948, earnings were \$3,250,810, an increase of $19\frac{1}{2}$ per cent above the corresponding period in 1947, and sales were \$16,528,168, up 18.6 per cent from the similar 1947 period.

Dividends have been regularly maintained at the \$4 rate on the preferred stock since the capital reorganization in 1942. Dividends on the common stock were paid at the rate of \$1 a share from 1943 through 1946 inclusive. In 1947 dividends of \$1.60 were paid and this rate has been maintained thus far in 1948.

Now, most of International's products are in abnormal demand. Ultimately, demand is expected to slacken and competition to increase among mineral and chemical manufacturers.

When that time comes, International will depend heavily upon one final peg which it has been driving hard into its corporate structure. That peg is research. Prior to its expansion drive, International had no active research department; now it spends over \$800,000 annually to improve fertilizer, food and industrial chemicals, and many related products. Equally important is the company's emphasis upon the development of cheaper, more efficient processing methods.

Through research and plant development, International believes it has become one of the most efficient producers of potash and phosphate in the world. When price tags again become the deciding factor, International is confident the price of its potash from New Mexico and its phosphate from Florida will more than match the best offerings of its competitors.

Federal Taxes

(Continued from page 24)

400 per cent, for today you can only borrow \$2500 on \$10,000 of collateral—and it is thoroughly unsound.

For the life of me I cannot understand why it isn't a better practice to have several thousands, in fact, maybe several hundred thousands of people, owing the banks \$1,000,000,000, if you please, secured by \$2,000,000,000 of common stock or ownership in American industry than to drive the companies who are ultimately the beneficiaries of the \$1,000,000,000 into the insurance companies or the banks to borrow. In one case we have distributed risk, while the other is bound to be more concentrated. In one breath, our federal reserve authorities state that the common stock market is the healthiest spot in the economy, indicating that our common stocks are worth what they are selling for, and yet with no rhyme or reason, they stipulate that you cannot borrow more than 25 per cent on your collateral at a time when no money to speak of is being borrowed on common stocks.

If in relaxing the rule to 50 per cent, our people should increase their borrowing rapidly, and if in the opinion of our private bankers and federal reserve authorities such borrowing is deemed excessive, we can make the margin 100 per cent again.

These two recommendations which I so heartily endorse will lend fluidity, continuity and orderliness to our markets. They will lend support in periods of weakness and I am confident will invite the sale of securities when they are in short supply or are being bid up in price in a moment of over-enthusiasm.

The capital gains taxes of the internal revenue code are not regarded as revenue-producing features of the tax structure. Although capital gains taxes produced various amounts of income, ranging from \$2,000,000 in 1941 to \$300-odd million in an active year such as 1945, I do not believe they produced any revenue to speak of in 1947. If the Congress will adopt the 12½ per cent capital gains tax rate instead of 25 per cent, I think the lower rates will actually increase revenues in the coming fiscal year. Certainly we should get behind a proposal that is thoroughly sound in the first place and that in the second place will gain us some revenues at a time when the federal budget is threatened with being unbalanced.

I am enough of an optimist and enough of a believer in the fundamentals of democracy to hold that lack of understanding of and sympathy with the capital markets and their problems are not on the main road of American thinking but a detour. I am convinced that if our course is just—and this I believe fully and profoundly—we can carry our message successfully to the public and our representatives in government. We can be strong in our cause and vigorous in our efforts because we are in the fortunate position of being able to serve ourselves and our country at the same time.

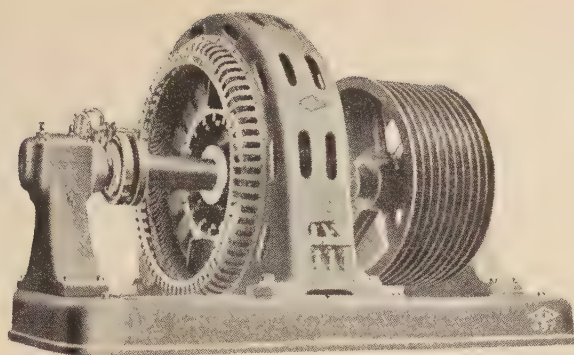
War Research

(Continued from page 17)

What is the peacetime future of concentrated peroxide? As a fuel, the chief drawback is the high cost of the material. While high test peroxide is not greatly higher in price than lower concentrations, it nevertheless is far more costly than diesel fuel, for example. But, in applications where space and weight, rather than fuel cost, are of primary importance, peroxide has unlimited possibilities.

A good share of the present experimental work on peroxide as an energy source is being carried on under government auspices, and the results have not been revealed. It is known that Caterpillar Tractor Company, however, has studied the use of a peroxide-alcohol fuel mixture to step up the power of Diesel engines instead of using superchargers. Other companies are similarly considering peroxide in auxiliary uses with conventional power plants.

Concentrated peroxide has peacetime possibilities other than as a source of power. According to Arthur D. Little, Inc., the industrial research firm, the higher strength peroxide is "essentially a new chemical of great potentialities in fields ranging from buzz bombs, rockets and submarines to commercial explo-



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sives and synthetic chemicals . . . The chemical uses of high test peroxide are still essentially unexplored. One volume of 90 per cent hydrogen peroxide releases an amount of active oxygen which is equivalent to 413 volumes of oxygen gas under standard conditions. This active oxygen is required in many industrial reactions. It leaves no residues, an especial advantage for food, drug, and cosmetic applications. It is soluble in many organic materials with which ordinary peroxide does not mix and may be diluted with organic solvents to slow down reactions. The highest test product is reportedly valuable as a catalyst in the formation of some resins and as a reactant in forming soaplike synthetics."

Another potentially valuable aspect of concentrated peroxide is as an explosive. The peroxide itself is not an explosive, but it may be mixed with a variety of materials—such as alcohol, for example—to produce a powerful blast. A mixture of peroxide and glycerine has been tested, and found to be more powerful than TNT or standard 40 per cent dynamite. The great advantage of peroxide as an explosive is that the ingredients can be carried separately to the site of the blast, thereby eliminating transportation hazards. In mining, particularly, peroxide is likely to be adopted as an explosive because it releases no poisonous gases when the explosion takes place. "Perhaps the miner of the future may carry his charges in the form of two liquids, neither in itself an explosive, but yet capable of forming a powerful and easily detonated mixture at the point of use," Dr. C. N. Satterfield, of the Massachusetts Institute of Technology chemical engineering department, says.

Concentrated peroxide, of course, will not find immediate use in every industry. As a power source, however, it is likely to find many uses before the greatest wartime development—atomic energy—is harnessed. The favorite bleach of disillusioned brunettes is destined for much more potent and practical service to mankind.

Here, There and Everywhere

(Continued from page 8)

cause of the inflated cost of patching up persons and property involved in collisions. Inflation notwithstanding, there are some specific sore spots for the automobile underwriter, according to James S. Kemper, chairman of the Kemper group of insurance companies. Teen-agers, he reports, have become increasingly unfavorable risks and rates on this age group are certain to rise. Drunken driving, still a most serious factor in the casualty toll, continues practically unabated despite wholesale license revocations in many states.



INDUSTRIAL DEVELOPMENTS

IN THE CHICAGO AREA

INDUSTRIAL developments in the Chicago industrial area in April, 1948, totaled \$6,848,000, compared with \$31,517,000 in April, 1947. These developments included new construction, expansion of existing plants, and the purchase of land and buildings for industrial purposes. Total expenditures in the first four months of this year were \$46,774,000 compared with \$63,683,000 for the same period in 1947.

Electro-Motive Division of General Motors Corporation has started construction of its sixty-eighth building on its LaGrange-McCook property. The new structure, which will contain 150,000 square feet of floor area, will be used as a service parts building.

William Wrigley Jr. Company has started construction of a six-story warehouse building at 1537 W. 35th street. The building will contain 100,000 square feet of floor space. Victor L. Charn, architect; Ragnar Benson, Inc., engineer.

Alexander Smith and Sons Carpet Company, Yonkers, N. Y., is constructing a 130,000 square foot structure at 5133 W. 66th street in the Clearing Industrial District. The building will serve as a local distribution point. A. Epstein and Sons, engineer and architect.

Spencer Chemical Company has purchased 80 acres of land on which it will construct a chemical plant. The site is on the south bank of the Calumet river, along 142nd street in Calumet City. Frank O. Birney, broker; Battey and Childs, engineer.

Standard Process Corporation, 734 W. Lexington, is erecting a one-story plant at 2704-22 W. Roscoe street. The plant, which will contain 40,000 square feet of floor area, will be used for the manufacture of rotogravure equipment. EnJay Construction Company, general contractor; Louis B. Beardslee and Company, broker.

American Brake Shoe Company has acquired the assets of the Morden Frog and Crossing Works in Chicago

Heights, including the plant at the corner of Washington avenue and 17th street. This plant will become one of the units of the Ramapo-Ajax Division of American Brake Shoe Company.

Sleepmakers, Inc., 2434 S. Western avenue, manufacturers of bed springs and mattresses, has purchased the property on the southwest corner of South Western avenue and West 24th street. Hart and Whetston, brokers.

Smith and Richardson Manufacturing Company, Geneva, Ill., will construct a new building adjacent to its present plant.

Burgess - Norton Manufacturing Company, Geneva, Ill., manufacturer of automotive parts and screw machine products, has purchased the foundry of Smith and Richardson Manufacturing Company.

Container Corporation of America is constructing an addition to its plant at 905 N. May street. Morton L. Pereira, engineer.

Page Engineering Company, manufacturer of highway machinery, is constructing a one-story addition to its plant on Lawndale avenue.

Vulcan Tin Can Company, Madison avenue, Hillside, Ill., is expanding its plant.

Shafer Bearing Corporation, Downers Grove, Ill., is constructing an addition to its factory at 801 Burlington avenue.

Hammond Instrument Company, 2915 N. Western avenue, will construct a storage building at its plant on the northeast corner of Diversey boulevard and Tripp street.

Precision Pattern Works, 5746 W. Division street, will build a new plant at the corner of Grand and Lockwood avenues.

Pioneer Tool and Manufacturing Company, Lyons, is constructing a shop addition.

Pacific Flush Tank Company, 4245-47 Ravenswood avenue, is building a 9,600 square foot addition to its plant.

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pany, 4718 W. Kinzie street, is constructing a plant at 4416 W. Chicago avenue.

S-B Architectural Iron Company, 609 W. Scott street, is constructing a plant at 32nd street and Colin avenue.

Century Steel Corporation, 600 W. 41st street, has started construction of a building adjacent to its plant.

Penens Corporation, Los Angeles, Cal., has purchased the one-story factory at 3900 Wesley terrace in Schiller Park.

Grand Die Casting Company, Elmwood Park, manufacturer of aluminum and zinc die castings, is constructing an addition to its plant.

Sheet Metal Engineering Company, 919 W. 49th place, has purchased the

property and equipment of M. H. Ritzwoller Company, manufacturer of wooden barrels, at 4800 S. Hoyne avenue.

North Shore Motor Express Company, Inc., 1520 W. Kinzie street, has acquired a building at 1440 N. Halsted street which will be operated as a public warehousing division. The building contains 50,000 square feet of floor space.

Kraft Foods Company, Division of National Dairy Company, has purchased the plant at 505 N. Sacramento boulevard.

Peoples Gas Light and Coke Company will construct a battery of 50 coke ovens at its Crawford avenue plant.

How Big Are War-Built Backlogs Now?

(Continued from page 20)

and older increased from 2,500,000 to 5,500,000.

During the first quarter of 1948, auto production was at an annual rate of about 3,500,000, which—if maintained—would be substantially in excess of the demand created by normal replacement and growth which is estimated at 2,500,000 cars annually. The significance—especially from the second-hand dealer's viewpoint—is that by the end of 1948 the deficit in total car population will have been eliminated. Hence, although the end of the abnormal market for used cars is in sight, the demand backlog for replacement of over-age cars will be even larger at the end of 1948.

While the market outlook for new

cars appears strong, the same does not hold true in certain other consumer durables. The case for vacuum cleaners is considerably less promising. Historically, vacuum cleaners came into common usage in the early 'twenties in advance of other household appliances, but demand has increased very slowly since then. During the 'thirties, when other appliance sales shot up, cleaner sales lagged.

A curious feature of the vacuum cleaner market is the frequency with which older models are repaired and rebuilt. As a matter of fact, when production stopped during the war, the number of cleaners in home use remained virtually unchanged. After



"I carry my own matches now."

the war, production got under way quickly, exceeding the prewar peak in 1946, and doubling it in 1947. The result was that by the end of 1947 the normal growth demand for cleaners had been largely met. Now, the industry has no backlog in the sense that any substantial group of families not already owning cleaners are unable to find them on the market.

Instead, the chief demand arises from replacement requirements, but this is obviously not as insistent as it might be if there were many housewives who had no cleaner at all. Figuring a useful life of 15 years, the replacement backlog probably amounted to about 5,000,000 machines at the end of 1946. Last year's production of 3,700,000 lowered the backlog to less than 3,000,000. The conclusion is that, unless manufacturers through extensive sales promotion can reverse the normal buying trend, vacuum cleaners are certain to feel the influence of easing demand shortly. Of the major consumer durables, they appear to be among the most vulnerable.

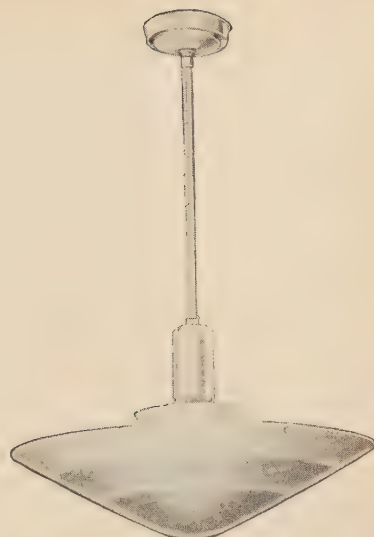
Strong Refrigerator Demand

The backlog demand for refrigerators is considerably stronger. Refrigerator sales, though negligible during the 'twenties, swelled rapidly in the 'thirties, then were stopped abruptly by the war. Afterwards, production was slow getting started; 1946 output was far below the pre-war peak and last year the industry barely surpassed its earlier record.

By the end of 1947, some 23,500,000 homes had electric refrigerators as compared with 19,400,000 in December, 1941. Even this 4,000,000 growth was only one-third as great as during the six-year period just prior to 1941, when real income was distinctly lower. It is calculated, therefore, that by late 1947 there was still a demand for about 4,000,000 refrigerators among potential first-time users and for 2,000,000 more units to meet replacement requirements.

Of the total 1947 output of 3,800,000 refrigerators, 3,500,000 were sold in the domestic market and more than half of these were absorbed by "normal" replacement and growth. An additional demand influence is the fact that some 10,000,000 electrically-wired homes—30 per cent of the nation's total wired homes—still have no electric refrigerator. Hence, indications are that among the five consumer durables surveyed, refrigerators rank next to automobiles in demand strength.

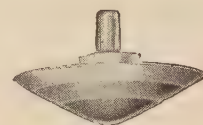
Although washing machines were also in record demand after the war, the industry in 1947 went a long way toward accommodating the backlog when it doubled its pre-war production record. It is now estimated that, as of last January, there was a backlog for



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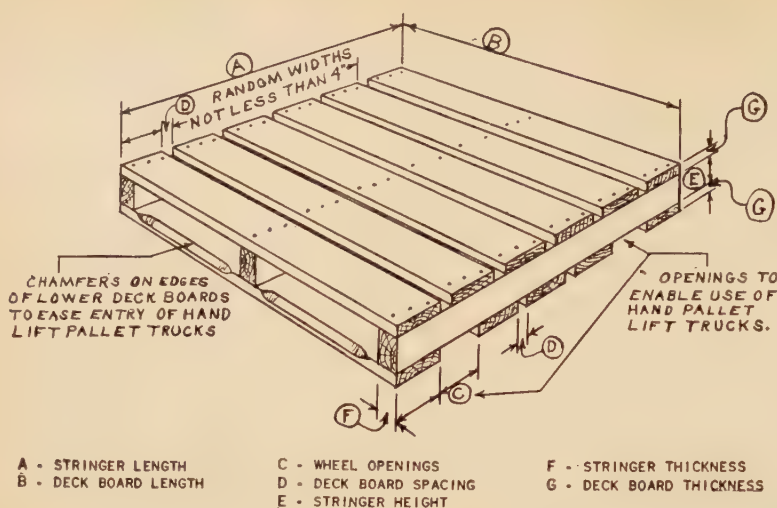
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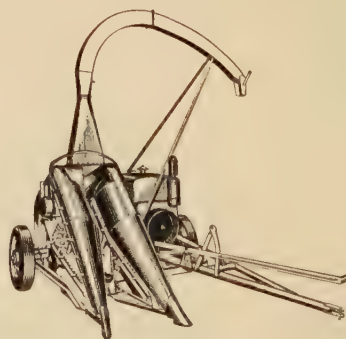
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2,000,000 machines among first-time users and for 3,000,000 machines to replace over-age models.

Two factors tend, however, to confuse the washing machine market. The large-scale introduction of automatic type washers since the war may speed up obsolescence and strengthen replacement demand. On the other hand, the growth of community washing machine centers may tend to restrict future demand.

Of the major consumer durables, radios are in more of a state of flux than any other. The outlook is complicated by the variety of models for sale and the lack of definite evidence of consumer reaction to the newer types of receivers now being introduced. On the basis of previous experience, however, the calculated demand reached a peak of about 20,000,000 sets just after the war. Rapid reconversion trimmed the backlog by some 7,000,000 sets in 1946, while last year's record output (14,500,000 units) brought the industry within a few million sets of satisfying this calculated overall demand.

FM and Television

It is impossible to estimate accurately the influence of FM and television on future demand. In 1947 conventional AM sets comprised 90 per cent of the industry's unit output, but because of their lower price AM sets accounted for only two-thirds of the estimated value of all retail sales. The average FM set cost about five times more than AM, and television sets average twice the price of FM. Although price ratios will change as FM and television production increases, the newer types will continue to retail at substantially higher average prices. It is reasonable to believe, therefore, that despite the exhaustion of order backlogs for conventional models, the industry has excellent possibilities of realizing large dollar sales through the exploitation of FM and television.

In the opinion of the Department of Commerce, the five consumer durables surveyed constitute an element of strength in the nation's overall economic outlook. Barring a serious business break, present indications are that order backlogs will tend to be exhausted in a staggered pattern over the next several years, providing assurances against an abrupt decline throughout the hard goods lines.

Conventional-type radios are already backing up, but television and FM have opened up a new market of vast potentialities. Although the demand for vacuum cleaners is likely to ease, autos, refrigerators, and washing machines continue strong in that order. Any serious weakening in total demand in the immediate future, the Department believes, is not likely to originate in the consumer durables fields.

TRANSPORTATION and TRAFFIC



A FURTHER increase in railroad freight rates, which will yield the carriers an estimated \$300,000,000 annually, was authorized by the Interstate Commerce Commission in their supplemental report in Ex Parte No. 166. The freight rate boost became effective May 6 and superseded a temporary 20 per cent increase previously granted the railroads. The May 6 increase on commodities generally was 30 per cent within eastern territory; 25 per cent within southern territory; 20 per cent within western territory, except from, to or within Western Trunk Zone I territory which was increased 25 per cent; and 25 per cent on all interterritorial traffic. The increase granted the carriers is less than they had requested in their petition, but the commission will keep the proceedings open for such further action as may be necessary. The railroads had asked for a 41 per cent increase in rates from, to and within eastern territory and 31 per cent within and between southern and western territory. In publishing the increased rates the carriers observed the maximum or specific increases proposed on certain commodities, as outlined in their petition of December 3, 1947, except as otherwise provided in the commission's order. The recent increase in railroad freight rates is the fifth in less than two years, excluding the Docket No. 28300 adjustment in class rates which became effective last August. On July 1, 1946, a temporary increase of six per cent was authorized in Ex Parte No. 162. This was superseded on January 1, 1947, with a 20 per cent increase within and between southern and western territories; 25 per cent within eastern territory; and 22½ per cent on interterritorial traffic between eastern territory on the one hand and southern and western territories on the other hand. On October 13, 1947, an emergency 10 per cent increase in total freight charges was authorized. This emergency increase was boosted to 20 per cent on January 5, 1948.

Motor Carrier Rates Increased: The Interstate Commerce Commission has

vacated their suspension of increased motor carrier rates published in tariffs of the Central and Southern Motor Freight Tariff Association and the Southern Motor Carriers Rate Conference, effective May 1. The rates were originally published to become effective March 25, 1948, but were suspended on the request of several groups. Increased rates published by the Middlewest Motor Freight Bureau were permitted to become effective on April 3 as scheduled. The Central States Motor Freight Bureau has published increased rate tariffs to become effective May 20. With certain exceptions, all of these motor carrier rate boosts are 20 per cent instead a recently authorized 10 per cent.

Bulwinkle Bill Passage Likely This Session: The prospects that the Reed-Bulwinkle Bill will be passed before the adjournment of Congress appears favorable. House bill, H.R. 221, will be debated on the floor of the House during the week of May 10 and it is expected to pass that body by an overwhelming vote. The companion bill, S. 110, passed the Senate last June by a vote of 60 to 27. The measure exempts carrier rate making practices and procedures from anti-trust prosecution when such practices and procedures are approved by the Interstate Commerce Commission. The bill is being supported by both shippers and carriers.

Senate Committee Votes Approval of H. R. 2759: A subcommittee of the Senate Interstate and Foreign Commerce Committee has voted to report favorably to the full committee on H. R. 2759, proposing a two-year limitation period for the filing of overcharge and undercharge claims by or against motor carriers or freight forwarders. The committee rejected S. 1194 which provides the same limitation period, but in addition includes reparations. This latter bill was supported by the Chicago Association of Commerce and Industry and the National Industrial Traffic League.

House Committee Approves Sale of Federal Barge Lines: The House In-

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terstate and Foreign Commerce Committee has voted to report favorably to the House on H. R. 5318, which would authorize the Secretary of Commerce to dispose of the facilities and rights of the Inland Waterways Corporation, operator of the Federal Barge Lines. The disposal would be by sale, lease, charter or otherwise after the Interstate Commerce Commission had made a report on the fair value of the corporation and the disposition had been approved by the President. The bill also provides that the purchaser shall succeed the corporation as to through routes, through traffic arrangements and joint rates to assure the continued operation of the lines.

I.C.C. Revises Demurrage Charge Order: Revised I.C.C. Service Order No. 775, effective May 1, provides demurrage charges on railroad freight cars, held beyond the free time, of

\$3.30 per car per day for the first two days and \$5.50 per car per day for each succeeding day. The \$11 and \$16.50 per car day demurrage charges which was contained in the previous order, but which was under suspension since January 19, 1948, was eliminated from the revised order. Amendment 1 to the revised order, however, reinstated these higher charges on gondola and open top hopper cars suitable for loading coal, effective May 13.

C.A.B. Sets Minimum Rate for Air Cargo: The Civil Aeronautics Board in an order released April 22, set a minimum rate for air cargo of 16 cents per ton-mile for the first 1,000 ton-miles and 13 cents per ton-mile for all ton-miles in excess of 1,000 ton-miles in a single shipment. The order applies to both scheduled and non-scheduled operators.

Opinion Polling for Industry

(Continued from page 30)

no longer seem to apply . . . Public opinion is in a constant state of flux; changes in opinion seem to be occurring at an accelerated rate, and this may be expected to create many new customer and public relations problems."

In addition to the use of opinion polling of employees, customers, and the general public, a comparatively new application is in determining what stockholders think and want. In this field, General Foods Corporation has had extensive experience.

In recent years, General Foods has used both mail and personal interview

surveys to discover stockholder attitudes. One mail survey, for example, was sent to all of the preferred and common shareholders with their dividend checks, to accomplish three results: to aid management in understanding better the problems of the company's 67,200 owners; to learn to what extent stockholders approve or disapprove of certain policies and activities of the company; and to learn what subjects and material the stockholders would like to have covered in the annual report and discussed at the annual meeting.



"Yeah?"—Well I hope you're caught and mounted on walnut in a loan bank!"

The most recent survey, handled by the research department of Young and Rubicam, Inc., was of a more specialized type. Its purpose was to find out what women stockholders of General Foods thought of the 1947 annual report and of the company's Stockholder News publication. Since the company's shareholders are scattered throughout the nation, it was decided to interview women in Cleveland, Buffalo, Philadelphia, Baltimore and New York City, because these cities contained enough women stockholders to make interviewing practical from a cost standpoint. Sample copies of both the annual report and the stockholder magazine were shown to the women interviewed. In the case of the publication, a "readership" interview (a technique developed by Dr. George Gallup) was used; this involved going through the magazine page by page and asking the respondent to point out to the interviewer every item on every page that she remembered seeing or reading.

Women Stockholders' Views

The results of the survey shed a good deal of light on the interests and attitudes of women shareholders—a group that is becoming of increasing importance to management. Here are some of the facts that were uncovered:

In the annual report, a display of General Foods brands on the back page attracted more attention than any picture or feature inside the report. Of the respondents, 60 per cent had read nothing in the annual report. (This fact didn't make General Foods feel too bad; a study of stockholders by Opinion Research Corporation showed that 68 per cent of all women stockholders either read annual reports hurriedly or not at all). In the General Foods survey, these were the reasons given for not reading the annual report: Not interested, 22 per cent; taken care of by husband or some other person, 14 per cent; not enough time, 14 per cent; bad eyesight, 2 per cent. The rest said they hadn't received the report.

In the company's Stockholder News, it was found that recipes and new product information was most likely to catch the wandering eye of a feminine stockholder. A quiz on the annual report—with the questions mostly concerned with financial data—attracted the least interest and the least enthusiastic comment.

The results, in other words, showed quite definitely that women stockholders are not sufficiently interested in company problems. The survey findings, therefore, might be used by General Foods in two ways: financial and economic data could be made more glamorous, to appeal to the average woman, or the company could capitulate and give the women only what

they seem to want—recipes, pictures of foods, and information about new products.

In a topsy-turvy world, where both social and technological change is occurring at an ever increasing speed, opinion research is becoming almost a necessity for any business that dislikes blind flying. "Opinion research is growing fast in its use by business," Clyde W. Hart, director of the National Opinion Research Center at the University of Chicago, says. "Business wants to know: Which people have certain attitudes? Why do they have them? How can they be changed?"

Mr. Hart emphasizes, however, the dangers inherent in the use of opinion research by unskilled persons. He warns that the results of surveys cannot be used in too arbitrary a manner, and that the conclusions to be drawn from the surveys, and the actions to be taken, should be based on professional knowledge.

Opinion research, of course, is not a cure-all, any more than any other tool of management is. It must be used with discretion. But even in its present admittedly youthful stage, attitude polling can be of great value to business. And constant effort is being devoted to improving the tools of opinion surveys—better questionnaires, more precise sampling methods, sounder methods of analyzing the results of surveys.

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New Products

Truck Tire Changer

A difficult garage job is the task of removing tires from big trucks, but now Edwin I. Butler Company, Charlotte, N. C., has developed a quarter-ton hydraulic remover that is said to whisk off the tires in a matter of minutes with virtually no manual labor at all. Wheel and rim roll on the machine, a pedal centers the tire, hydraulic pressure pushes out the rim and lets it fall free. The machine, which handles rims and wheels from 18 to 24 inches in diameter, is distributed by Anderson Industries, Charlotte, N. C.

Automatic Parking Meter

Parking meters are a great boon to community treasuries, but one trouble has always been that a civic servant must journey around winding up the meters every three to seven days. This costs roughly \$7 per meter per year or \$7,000 annually if a city has 1,000 meters. The Duncan Meter Corporation, 835 N. Wood street, Chicago, has now developed a fully automatic meter that is self-starting and never needs winding. The new cast-aluminum "Automaton" operates through the balance of several power springs.

Versatile Neon

A new type of neon sign, the lettering of which can be changed in a matter of minutes, has been introduced by the Zephyr Products Company, New York. The "Neosign" uses a blackboard into which 51 two-inch neon characters can be fitted without wires or plugs. Only the

blackboard is connected to the electric outlet. "Neosign" is distributed by Roberts Companies of America, 65 William Street, New York 5.

Plastic Insulator

A light-weight plastic foam insulating material, called U. S. Flotofoam, has been introduced by the United States Rubber Company, New York. The new insulator is said to be especially useful where space is an important consideration because with the plastic material installation walls can be made thinner. Thus, Flotofoam is recommended for fresh and frozen food shipping containers, commercial and home refrigeration units, and refrigerator trucks, railroad cars, ships and airplanes.

Outdoor Stove

For sportsmen, the Travelers Equipment Company, 334 Keeler Building, Grand Rapids, Mich., has developed a "pocket-size" stove of Monel metal that folds into a compact package. Using gasoline or cigaret lighter fluid, the burner emits a blow-torch-like flame.

"Wax-E-Wash"

C. Z. Chemical Co., a division of Allied Home Products Corporation, Beloit, Wis., has come up with a new compound said to wash and wax a car in one 30-minute operation. Mixed with water, the wax solution is applied with a sponge, the wax staying on the surface as a fine dust. The last step is to remove the dust with a chamois or dry cloth to provide a glossy finish.

New Building Panel

A building material, called "Durisol," that is claimed to have the workability of wood and the durability of concrete, is being manufactured by Durisol, Inc., 420 Lexington Avenue, New York. Originated in Europe, the new material is a mixture of chemically-treated wood shavings and Portland cement, pressure-shaped into blocks, panels, and slabs. It is said to be sound absorbing and fire resistant and to have high insulating properties.

Overflow Control

For the motorist who dislikes having an extra, overflow squirt of gasoline poured down his rear fender, Scully Signal Company, Cambridge, Mass., offers its new "Ventalarm Fil-Gard." With the device, a whistle

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blows while the gasoline tank is being filled, stops when it is full. An added attraction: a baffle which prevents siphoning.

Heavy Duty Truck

A giant-size truck that hauls 20 tons and is especially designed for use in steel mills has been developed by Yale and Towne Manufacturing Company, Philadelphia Division, 4531 Tacony Street. Battery-powered, the big truck can, among other things, move coils from strip mills to storage, tier the coils, charge annealing furnaces, and load carriers.

Nylon V-Belt

The U. S. Rubber Company, New York, has introduced a nylon-reinforced V-belt which, the company declares, has double the strength of conventional V-Belts.

Fisherman's Aid

The Eureka Manufacturing Company, Box 13, Ada, Okla., has devised a motor-driven minnow bucket designed to keep bait alive on long fishing trips. Operated from an auto battery, the unit is said to keep 20 dozen minnows alive for a week without changing water.

Concrete Breaker

A medium-weight (63 pounds) concrete breaker, designed for demolition work not requiring a big, heavy-duty breaker, has been introduced by Gardner-Denver Company, Quincy, Ill. The tool is said to be especially suitable for horizontal operations, tearing out walls, breaking quarry boulders, and for trenching in shale or hardpan.

Super Roach Killer

A new insecticide which is said to have 28 times the killing power of DDT yet offers safety from toxic effects on humans and animals has been developed by the Nash and Kinsella Laboratories, 1218 Olive Street, St. Louis, Mo. According to the company, the new-type Aerosol bomb will throw a spray eight feet; insects can be killed by hitting them directly or rooms may be filled with the spray.

Multitool Turret

A time- and labor-saving mechanism for machine shops is the new drill turret developed by Howe and Fant, Inc., South Norwalk, Conn. Called "Lign-o-matic," the turret unit has six spindles, any of which can be quickly centered and aligned through the use of specially-designed floating bearings and a tapered driving unit. The unit has no gears or teeth; in-



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stead, power is directly transmitted from the press to the tool through the same tapered surfaces that provide alignment.

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Avenue, Detroit, Mich., has introduced a new device for housewives called the "Space Saver." It is a small chromium-plated steel shelf that hangs under ordinary refrigerator shelves to provide extra space for bottles and groceries.

"Trailerails" Service On I. C. A Success

The experimental service started by the Illinois Central Railroad in February with less-than-carload shipments in "trailerails", which are aluminum containers transferable from truck trailers to railroad flat-cars, has proved such a success that the I. C. is extending this revolutionary service.

Originally the trailerail shipments were handled only between Chicago and Memphis. The road is now offering the service to New Orleans and expects to place it in effect soon to St. Louis and Birmingham. Photographs below show the method of handling the trailerails, which are aluminum containers of 20,000 pound capacity. For collecting and distributing shipments, they are carried on specially equipped truck trailers. In rail transport, two are carried on a flat-

car. Transfer of a trailerail from trailer to flatcar or flatcar to trailer is accomplished by special power equipment on the truck trailer in a matter of minutes.

Shipments of 5,000 pounds or more are accepted for the service. The big advantage lies in eliminating the cost and time loss of handling of l.c.l. shipments in terminals. Service to Memphis is by I. C. train No. MS1, with a container arriving in Memphis the following day and being delivered either the same afternoon or the following morning. For the present, delivery at points other than Memphis to which the service is extended will be handled through regular freight houses because the road does not yet have enough tractor-trailer equipment for handling containers.



Above: "Trailerail" l.c.l. containers being transferred to flatcar. Below: Two trailerails secured to flatcar ready to go

Educating Educators

(Continued from page 15)

ties have now established an annual "Business, Industry, and Education Day," during which high school and college faculties dismiss classes and spend eight hours visiting nearby industrial establishments. Business, labor, and civic groups are applauding the idea and more communities are likely to adopt "B.I.&E. Days" this year.

Last Fall, Professor Horn began pondering a logical question: "If the industry-education idea clicked in Michigan, why not expand it into a national program? There would be a transportation problem, of course, if one undertook to escort larger groups of educators from city to city. That was easy, said several airlines, which enthusiastically endorsed the idea, promised close cooperation, and helped glamorize the scholarly undertaking by rechristening it "The Flying Classroom."

Over 200 "Students"

The latter, of course, was no more than the original Michigan State Plan plus some yeasty publicity frills. Thus, last February, the first national "Flying Classroom" got underway in Chicago where, under Professor Horn's guidance, more than 200 high school and college educators from 23 states embarked on an intensive week-long study of American industry.

Dividing into four field parties, one group of schoolmen spent the first eight hours at International Harvester Company's research laboratory on Chicago's west side. Another party visited Sears Roebuck and Company. A third group spent the day at Carnegie-Illinois Steel Corporation's South Works; a fourth toured the Continental Illinois National Bank and Trust Company in downtown Chicago.

Next day, the same groups went off on a second round of industry, visiting Marshall Field and Company, Swift and Company, Western Electric's Hawthorne Works, and R. R. Donnelley's vast printing establishment. By the third morning, the educators prepared for a change of scenery. At 6:30 a.m., they filed into four chartered airliners and disembarked two hours later at Detroit's Willow Run airport. There the schedule picked up again with an eight-hour round of the Chrysler, General Motors, Ford, and Kaiser-Frazer plants. Airborne again at 6 p.m., the flying educators landed in New York the same night, where on the following morning, they began the last leg of their week-long excursion.



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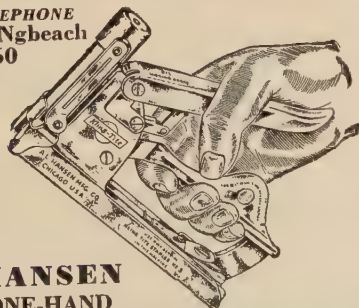
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In two days, the schoolmen looked in on the United Nations Organization, the National Broadcasting Company, the Metropolitan Life Insurance Company, the New York Stock Exchange, American Telephone and Telegraph Company, and finally spent a busy morning at the International Ladies' Garment Workers' Union.

At the end of the week, there was hardly an educator who did not regard the "Flying Classroom" as a thoroughgoing success. For its part, industry too had learned much about education and its problem. As Professor Horn put it, "We found that business and industrial leaders are as uninformed about education as educators are about big business."

Typical Visit

Of the many visits the schoolmen made, the one to International Harvester's research laboratory was typical. There, after an extended plant tour and a Harvester-provided luncheon of shrimp cocktail, beef steak, and ice-cream tarts, the educators lit their Harvester-provided Blackstones and settled down for a brass-tacks discussion of what's wrong with education.

A. C. Seyfarth, Harvester's director of education, led off by telling the schoolmen that students are able enough in learning factory techniques and office routines. But, he added bluntly, "the trouble is they have not learned to think for themselves."



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Said the Harvester man, "Industry can make one suggestion to education: we would rather have a man come to us who has learned to think, rather than one who is highly efficient in the manual arts. Train your students in basic fundamentals rather than in specialized skills."

Superintendent of Schools Earl W. Wiltse of Grand Island (Neb.) probed deeper into the problem. He asked, "What do graduates lack most when they come to you?"

Harvester has no official theories, suggested E. H. Reed, manager of manufacturing training. Personally, however, he feels many high school and college graduates lack enthusiasm, a sense of responsibility, and the desire to do a good job. He added, "They are also weak in expressing themselves either orally or on paper."

After several hours of brisk discussion, the talk turned to other fundamentals. Visitor John Zorella, supervising principal of Manville (N. J.) public schools, posed the question, "What are the social obligations of a large corporation?"

Harvester's Seyfarth thought a moment, then declared, "International Harvester is a big company and, of course, its actions affect many people. We feel we have an obligation to make Harvester not only a profitable business but a social institution of the widest possible usefulness. Our primary responsibilities are to three groups of people: our customers, for whom we must provide constantly better products at reasonable prices; our employees, for whom we must provide well-paid jobs, good working conditions, opportunities for promotion, and good human relationships; and, finally, our stockholders, whose investment we must safeguard and make grow if possible through reasonable profits."

Education By Business

Many a visiting educator was surprised to learn the extent of Harvester's own knowledge of education. They found, for example, that Harvester pays \$25,000 a year to the University of Chicago to advise the company on employee education, that Harvester provides free off-hours study in such assorted subjects as home plumbing and carpentry, dress making, photography, international relations, and fly casting. Through its adult education, the schoolmen learned, Harvester believes it is bringing rank and file employees closer to the company.

An Oklahoma educator remarked at the conclusion of the visit, "I learned more here in one day than I could in several months of text book study." His sentiment was probably shared by his companions. Harvester's Board

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Chairman Fowler McCormick was equally enthusiastic, saying: "I am heartily in favor of the Michigan State program which enables educators to get a first hand impression of American industry in operation. We in our company appreciate the opportunity to cooperate."

In the future, Professor Horn now believes, air travel may yet play an even greater role in American education. Looking out across the rolling campus at East Lansing, he pictures the day when airliners will bring scholars from all parts of the nation to our National Capital, when they will transport students of history to Greece and Rome and the Nile Valley, when they will carry students of business to New York, Chicago, and London.

That is the ultimate goal of Professor Horn's "Flying Classroom." For the time being, however, he is convinced that air travel plus cooperation on both sides is helping to break down a long-standing barrier of misunderstanding between education and modern American industry.

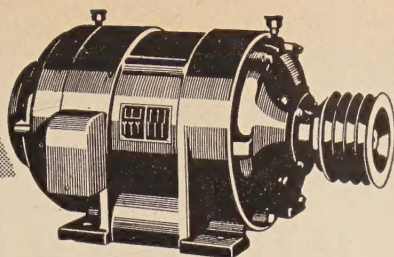
Electric Utilities

(Continued from page 14)

struction of a vast \$322,000,000,000 hydroelectric power plant on the International Rapids section of the St. Lawrence River. The ten electric companies comprising the Southwest Power Pool, with headquarters at Little Rock, Ark., have an expansion program roughly figured at \$24,000,000 through 1951. The five-year capacity increase will total 1,386,000 kilowatts, a boost of 96.5 per cent. The Tennessee Valley Authority has asked Congress for \$4,000,000 to construct a plant for generating electricity by steam at New Johnsonville, Tenn.

Edison Expansion

The Commonwealth Edison system in the Chicago area has a huge expansion program. This system is composed of Commonwealth Edison and several subsidiaries, including Public Service Company of Northern Illinois, Illinois Northern Utilities Company, Western United Gas and Electric Company. The first step in the Commonwealth Edison postwar expansion program was completed last year with the installation of a 107,000-kilowatt unit at the Calumet station. The next addition is expected to be a 150,000-kilowatt unit at the Fisk station in Chicago, scheduled for completion early in 1949. A new 107,000-kilowatt unit will be operating at the Joliet station early in 1950. Ground



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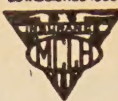
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has been broken this year for the new Ridgeland station, and the first 150,000-kilowatt unit should be operating there by the end of 1950. A second is planned for the Fall of 1951. The Ridgeland station will be capable of an ultimate capacity of 600,000-kilowatts.

The billions of dollars being committed by the electric power system have tied up equipment producers for years. Deliveries range from three to four years on some items of heavy equipment like large power transformers and turbo-generators. The utilities are buying larger and more standardized equipment than before the war. They are striving to lengthen the economical range of power sources. There now is some form of interconnection between plants producing 98 per cent of the country's power. Longer transmission demands higher voltages. The highest in use at present is the 287,000-volt line carrying power from Boulder Dam to Los Angeles, a distance of 300 miles. However, 500,000-volt lines are being tested.

Hopes For Atomic Power

One of the fondest hopes for atomic energy is that it will ultimately provide the fuel for electric generating plants. If such hopes are realized on an economical basis, some of the gaps in the national power pool can be filled by the construction of plants in areas now remote from coal and oil sources. Specialists see little likelihood, however, that present generating plants will be rendered obsolete by the development of atomic power.

"We may assume," says Joseph E. Armstrong, engineering director of the Argonne National Laboratory, "that in stationary power plants a large part of the equipment can remain unchanged. Steam plants and electrical equipment can be of the conventional type. The atomic power pile and circulating coolant would take the place of the furnaces and coal handling equipment."

Sales departments of the utilities as well as purchasing, engineering and research men are busy. New programs to promote the increasing use of electricity by homes and business already are selling kilowatthours. The electric power expansion program has been ordered in the belief that demand will be much greater by 1951. Electricity salesmen are making sure it will. The power companies are eager to set up an adequate reserve, but they don't want a surplus—and they are guarding against one.

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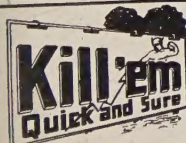
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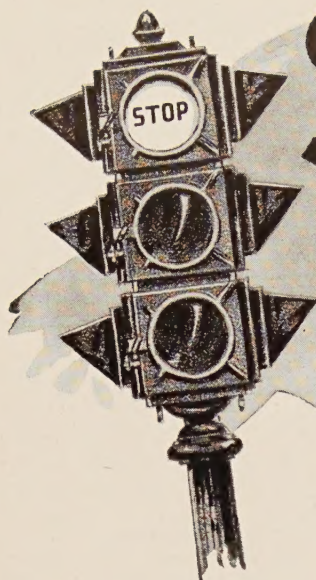
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Pushing her way through the crowd, she turned all of her charms upon a gentleman who looked embarrassable. "My dear Mr. Brown," she gushed, "fancy meeting you on the street car. Am I glad to see you! Why you're almost a stranger. My, but I'm tired."

The sedate gentleman looked up at the girl. He hadn't seen her before, but he rose and said pleasantly, "Sit down, Bertha, my girl. It isn't often that I see you on washday. No wonder you're tired. By the way, don't deliver the washing till Wednesday. My wife is going to the district attorney's office to see whether she can get your husband out of jail."

* * *

A wise guy stepping up to a bus as it stopped the other morning said to the driver: "Well, Noah, you've got here. Is the Ark full?"

The motorman answered back:—"Nope, we need one more monkey. Come on in."

* * *

Mother: "Son, when that naughty boy threw stones at you, why didn't you come and tell me instead of throwing them back at him?"

Jimmie: "Aw, gee, Mom, what good would that do? You can't hit the side of a barn."

* * *

An Arkansas hillbilly built a house for his wife in which he fashioned windows but no doors.

"Where are the doors?" asked the nervous bride.

He drew himself up to his full height and replied: "Doors? Are you going somewhere?"

* * *

Traffic sign in Pennsylvania village: "Slow, no hospital."

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Mrs. Brown: "Did you catch your husband flirting?"

Mrs. Jones: "Yes, just once."

Mrs. Brown: "What did you do to him?"

Mrs. Jones: "Married him."

One of the insurance organization's stenographers persisted in falling asleep at her desk. The situation being what it is, the cashier felt he should talk it over with the manager before firing her.

The manager was definitely perturbed. "We can't let her go," he moaned. "You know we'd never get another girl to take her place." Then a solution dawned on him.

"I'll tell you what," he suggested. "Print a placard to hang on her when she's sleeping at her desk. Say on it, 'When you have insurance, you will sleep this way, too.'"

* * *

Solicitor: "Could you please donate something to the Old Ladies' Home?"

Man: "Sure, help yourself to my mother-in-law."

* * *

"Smith," asked the restaurant manager to a waiter, "why did that man at table number five leave so suddenly?"

"I don't know," replied the waiter. "He asked for sausages and I told him we were all out of them, but if he would wait a few minutes I'd get the cook to make some. I went to the kitchen, and as I set down a tray of dishes, I stepped on the dog's tail and he yelped. When I came back into the dining room, the man was dashing out of the front door."

* * *

Wife: "Did you notice the wonderful coat the woman had on who was sitting in front of us in church this morning?"

Husband: "No, I'm afraid I was dozing."

Wife: "It does a lot of good to take you to church, doesn't it?"

* * *

The pastor of a little church in was famous for the fact that every his sermons lasted exactly 22 minutes. The one unfortunate Sunday the sermon lasted three-quarters of an hour.

At dinner his mortified wife asked him what had gone amiss.

"It was one of those things," said the pastor moodily. "My secret device was to slide a cough drop under my tongue just before beginning the sermon. It melted in exactly 22 minutes. Then I knew it was time to stop. This morning I was talking for over 40 minutes before I realized my cough drop was a suspender button."

* * *

Teacher: "Where is the capital of the United States?"

Pupil: "On loan all over Europe."

* * *

"Boss," said the young salesman, "I'm getting married next week, and I'd like a raise."

"So you don't think two can live as cheaply as one, eh?" his employer rejoined. "You want some more money to meet living expenses?"

"No," explained the prospective bridegroom. "I'm making enough now for us to live on."

"Then why do you want a raise?"

"Well, it's this way," the young man replied. "In an unguarded moment I told Mary how much I get, so I'd like a little more for my own use that she doesn't know about."

* * *



"Which way Great White House? Bring 'um father's day present."